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DEC 17 1923

AUTOMOTIVE INDUSTRIES
The AUTOMOBILE

Vol. XLIX
Number 24

PUBLISHED WEEKLY AT 239 WEST 39th STREET
NEW YORK, DECEMBER 13, 1923

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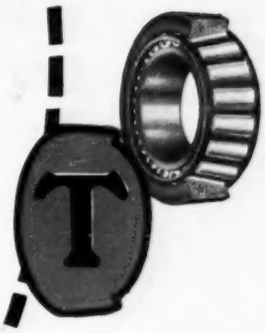

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AUTOMOTIVE INDUSTRIES
The AUTOMOBILE

VOL. XLIX NEW YORK—THURSDAY, DECEMBER 13, 1923 No. 24

Automotive Industry Should Lead in Safety Movement

Need for Action on Economic as Well as Humanitarian Grounds, Says Expert Experienced in Study of Traffic and Accident Problems.

By C. W. Price
Vice-president, in charge of Public Safety Division, Elliot Service Co.

THERE are at least five major reasons why the automotive industry should become actively interested in the prevention of traffic accidents and should, as quickly as possible, take the lead in the national public safety movement. That is the conclusion to which I have come after studying for five years the causes of traffic accidents, after watching the efforts of more than a score of cities to eliminate those causes, and after participating in the planning and direction of the safety campaigns of more than a dozen of our largest cities.

Entirely aside from humanitarian considerations, aside from any moral obligations, but purely on the basis of sound economic principles, the automotive industry should take the lead in the public safety movement for the following reasons:

1. Because as a result of the accident situation a reaction against the purchase, use and toleration of motor vehicles has already set in.

2. Because the whole problem of public safety is still in the formative stage, awaiting the leadership of some group of interests—such as the automotive industries—having more invested capital, wider contacts, greater influence, and more aggressiveness than have thus far been available for this movement.

3. Because of the tendency toward, and in many cases the enactment of, restrictive and "half-baked" legislation and regulation.

4. Because of the very strong tendency toward superficial or half-hearted safety campaigns which not only fail to accomplish their purpose, but leave the community cynical, and make it difficult later to start a really constructive safety campaign.

5. Because of the high cost of motor vehicle insurance and the detrimental effect that this factor is having on the whole industry.

Reaction against the purchase, use, and toleration of motor vehicles has already set in. It is evidenced by the following manifestations:

a. Family men refraining from buying cars because of fear of accidents.
b. Family men selling their cars because of this fear.
c. Owners of automobiles not using them as much as they used to, or as much as they would like to, because of fear inspired by the almost epidemic proportion of accidents and because of the growing congestion of traffic.
d. Trucking companies displacing motor vehicles with horses and wagons, largely because of the high cost of motor vehicle accidents or of insurance against losses through such accidents.

THE foregoing statement may appear to be an exaggeration to those who have not personally experienced or witnessed the effects of this reaction; to those who are thinking only of the fact that the automotive industry is at present practically at the height of its prosperity; to those who do not realize that an even greater number of cars, tires, parts and equipment could be sold each year if it were not for this unfavorable attitude.

If these persons will merely make a few inquiries they will find that in many cases where a member of a family has been killed while riding in an automobile, all other members of the family for a long time avoid riding in motor vehicles, and in many cases stop altogether. They will find that where an automobile has killed a person, the owner or driver of the machine

THIS is the first of a series of three articles which point out very specifically the relation of the automotive industry to traffic and safety problems.

The author of this series has had long experience in safety work. Some years ago he organized and directed the drafting of the safety codes for the State of Wisconsin and later was successively Secretary, Vice-President and President of the National Safety Council. During the last two years he has been planning and directing safety campaigns in New York, Washington, Baltimore, Louisville, Pittsburgh and other cities.

In two subsequent articles Price will tell how these cities have begun to control their traffic accident problems and how the automotive industry can be instrumental in bringing about similarly successful campaigns in cities throughout the country.

thereafter drives much more reluctantly, and in many cases stops driving altogether. They will find that when a person is killed in an automobile accident, or is killed by another man's car, the neighbors, friends, relatives and business associates both of the man killed and of the man whose machine was responsible for the killing are affected, because the accident possibilities are brought close to home.

If they will couple with these findings the fact that last year approximately 14,000 persons were killed in motor vehicle accidents, that approximately 350,000 persons were injured in motor vehicle accidents, that over 100,000 motor vehicle drivers were at the wheels of the machines causing most of these deaths and injuries, they will recognize that it is not an exaggeration to say that family men—and to a greater extent, women—are refraining from buying cars because of the fear of accidents; that men and women are selling their cars because of this fear, and that people who value their own lives and the lives of their children more than the pleasures and conveniences to be derived from driving an automobile are not driving as much as formerly.

The statement that trucking companies are displacing motor vehicles with horse teams for this same reason is based on fact, not speculation. One of the largest trucking companies in America has recently determined on this policy.

WHAT has brought about this reaction? You will find the answer on the front page of almost any newspaper any day in any city. Forty persons are killed and 1000 injured every day by traffic accidents! That is the answer. Considering the present alarmed condition of the public mind, as revealed in the front-page publicity which the traffic accident problem receives, and given the accident situation which we know exists today, imagine what will be the condition when the number of machines on our streets is doubled! The automotive industry must look in the face the disagreeable fact that for every million additional machines put on our streets approximately one thousand additional persons are killed in traffic accidents each year. A study of the statistics of motor vehicle accidents and of the number of motor vehicles in use since 1919 shows that the number of automobiles in the United States has increased on an average of nearly 20 per cent each year and the number of deaths from motor vehicle accidents has increased on an average of 14 per cent each year. It is a pretty grim fact that just so certainly as during the next year the number of motor vehicles is increased by 20 per cent, just so certainly will the number of persons killed be increased by 14 per cent.

The question is raised whether the unfavorable reaction against the motor vehicle as an accident maker will not be dissipated in time by the very fact that almost every family will own an automobile. The answer to this question is that we are all pedestrians more hours of the day than we are motorists. Every one of us every day is testing his ability to dodge automobiles and constantly the task is becoming more difficult. Every person is having first-hand experience with the careless, thoughtless, or reckless driver, and every contact with a member of that large group of individuals prejudices all of us against him and against the vehicle he is driving, although the machine itself is safe enough.

This unfavorable reaction will get worse each year unless the movement for the solution of the accident problem is taken over by some powerful interest and conducted in a thoroughgoing way.

TIED hand and foot with the accident problem is that of traffic congestion. Congestion in many cities today is due directly to efforts to control the traffic accident problem without intelligent study or adequate knowledge of the causes of accidents and the means of eliminating them. Parking laws, one-way streets, safety zones, and traffic regulation of any sort all call for an intelligent survey of traffic conditions. It has been found that when a community is organized for the prevention of traffic accidents there nearly always follows an intelligent study of traffic conditions by business men who, through their organizations, are able to do quickly and thoroughly what the police can never do alone.

The whole problem of public safety is still in the formative stage, awaiting the leadership of some interest such as the automotive industry, having greater resources, wider contacts, greater influence and aggressiveness than have thus far been available for the movement. Think of what could be accomplished if the brains of the automotive industries were applied seriously to the traffic accident problem! Just as the United States Steel Corporation, by taking the lead in the industrial safety movement in 1908, put that movement on its feet not only in its own plants but throughout industry, so the automotive industry could today, by assuming leadership in the public safety movement, bring under control not only the motor vehicle accident problem but the entire traffic accident problem.

Let me not be misunderstood as suggesting that the automotive industry go into the business of conducting safety campaigns. The problem of accident prevention is, after all, a community problem rather than a national one. No outside influence or organization can make any community a safe place in which to drive or walk. Each community must do that for itself. What is needed, however, is for some big group of interests like the automotive industry through a nation-wide educational campaign to propagate these three ideas:

a. Traffic accidents can be prevented.
b. They have been prevented in many cities.
c. The plans and materials used in those cities are now available for any community.

THE automotive industry could reach the various national organizations and through them influence to action every automobile club, every chamber of com-

merce, every civic organization, and every social agency which ought to assume the responsibilities of accident prevention in their respective communities. The automotive industry could also do much to enlist the cooperation of the steam railway interests, the electric railway interests, and the insurance interests, all of which are now losing millions of dollars yearly through traffic accidents. The automotive industry must do this if it wants at least a partial solution of the traffic accident problem next year instead of ten years from now.

City and State legislative bodies throughout the country are being forced to pass laws because the condition of alarm and aroused public opinion demand that something be done about the automobile accident problem, and they do not know of anything else to do.

At least five States already have laws requiring every motor vehicle to come to a full stop at railroad crossings. In at least one State this law is being used by justices of the peace, deputy constables, and other petty officials to milk motorists of five- and ten-dollar fines for failure to stop. The legislators who enacted this law did not know that you cannot compel a man to be careful; that you can only educate him or, through a gradual process, train him to be so.

WHILE it is true that recklessness on the part of the motor vehicle driver is the cause of most crossing accidents, it is not necessary to come to a stop at every crossing to avoid accidents.

The very strong tendency toward superficial or half-hearted safety campaigns, which not only fail to accomplish their purpose but leave the community cynical and make it difficult later to start a really constructive safety campaign, comprises the fourth item to be considered. During the last year perhaps a hundred American cities have made abortive attempts at public safety campaigns. In practically every one of these cases the failure of the campaign was due to just one thing: lack of information as to the means of organizing and directing a permanent safety campaign. In a subsequent article I shall tell exactly how the five or six successful campaigns of the last year were conducted and how any city may apply to its own conditions the plans and material used in these campaigns.

In some of these communities special stress has been laid on some minor cause of accidents which, because of lack of accurate analysis of the accident experience, was exaggerated out of all proportion to its true importance.

Some cities, for instance, have stressed defective brakes, and yet a recent authoritive analysis of 2000 motor vehicle accidents revealed the fact that only 19, or less than 1 per cent, were caused by defective brakes. This same analysis revealed the fact that defective vision was responsible for only 3 accidents, or two-tenths of 1 per cent, and yet some cities are stressing this cause in their efforts to eradicate accidents.

The above facts point out the danger of city officials and public spirited citizens being misled, through lack of information, into spending much time and honest effort in attacking certain minor causes of accidents and neglecting to organize an aggressive community-wide educational campaign which will help to eradicate carelessness and recklessness, the two great causes responsible for at least 75 per cent of the motor vehicle accidents.

RATES for the various forms of automobile accident insurance are based directly on the frequency and severity of automobile accidents. As the number of accidents has increased from year to year, insurance rates have, of necessity, increased proportionately. In New York City, for instance, it costs the owner of a middle-priced car $150 or more a year for just a moderate amount of public liability insurance. In 1922 the motor vehicle owners of this country spent $205,000,000 for automobile insurance, the bulk of which was, of course, accident insurance. The result is that hundreds of thousands of car owners carry no insurance, and largely because of this they are less inclined to drive in rain, snow, at night, in very heavy traffic, or under circumstances where they can as easily walk. Many of my personal acquaintances are getting to the point of not using their machines except when they have to or when the weather is particularly inviting, largely because of the growing danger of accidents.

THERE is great danger of large numbers of people beginning to look on the automobile as more of a menace than a blessing. It is within the power of the automotive industry not only to anticipate such a point of view, but to help work out the solution of an important national problem. It is possible to encourage every city of 25,000 or more to get under way with its own resources and local talent a well-organized safety campaign which would cut down the number of automobile accidents as radically as industrial accidents have been reduced. The automotive industry would secure almost immediate recognition and reward for such a service to the country. The difference in public opinion brought about within a year would more than compensate the industry for its expenditures in this direction.

It is already a well-known fact that juries in accident cases involving a motorist and a pedestrian almost invariably give the pedestrian the benefit of the doubt. The policy of the average juryman is to make the automobile owner pay, irrespective of responsibility for the particular accident.

Contrast with this situation the experience of an electric railway in one of the Eastern States which, a number of years ago, established the policy of settling every claim for damages outside of court, if at all possible, and settling all claims liberally. This railway notified all the lawyers, judges, newspapers and the public gener-

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AUTOMOBILE accidents cost 11,066 lives in the 37 States in the census registration area of the United States last year, an increase of 1498 over the preceding year. This represents a death rate of 12.5 per 100,000 population, an increase of one per 100,000 over 1921 and 3.5 over 1917.

California with 26 deaths per 100,000 population had the highest rate and New York was second with 16.7; New Jersey was third with 16.4; Colorado fourth with 16.3 and Mississippi was lowest with 3.4. The largest increase was in Vermont, where it went up 4.6 to 11.1. Decreases were recorded only in Connecticut, Massachusetts, Montana, Virginia and Washington.

Los Angeles had the highest rate for cities with 29.5 per 100,000. Camden was second with 27.9; Memphis third with 25 and Atlanta fourth with 24.7. Sixteen of 67 cities had rates of 20 or more, although 23 cities showed a lowering of the rate.

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ally of this policy and has adhered strictly to it with these results: its accident costs are now only 2 per cent of gross revenue, as compared to 4.7 per cent, the average of the entire electric railway industry and compared to 8 to 10 per cent in the case of many roads.

Today when a suit for damages against this company is brought into court, the jury asks: "How does it happen that the claimant refused to settle with the company outside of court?" And during the past year only two claims against this company were taken to court.

No one can estimate what it will mean in dollars and cents to the automotive industry for the public to have the right attitude toward the motor vehicle. Take, as an example, the motor bus, which is just now on the verge of tremendous expansion. Public opinion will, in many communities, determine the legislation, the regulations, and the patronage on which the successful use of motor buses hinges.

Who can estimate the amount of money that the automotive industry is spending today to break down the sales and advertising resistance created by the actual accident experiences of 365,000 persons a year, to say nothing of the sales resistance resulting directly from the unfavorable public opinion of the millions who have not personally experienced automobile accidents, but believe that human life is the most sacred thing on earth.

Bus Traffic Increases in Buenos Aires

THE omnibus is coming into its own in Buenos Aires. The small buses, made up of a 12-passenger body built on Ford truck chassis, are fast disappearing and are being replaced by solidly constructed bodies with seating capacity for 20 passengers, mounted on heavier truck chassis.

The omnibus idea was slow in getting started, even though conditions for its extensive employment in Buenos Aires were ideal. Passenger traffic had outgrown the facilities afforded by surface and underground street railways and additional transportation could be supplied immediately only by bus lines. Since, however, the opportunity for service and profits open to these lines became so apparent, applications for concessions have flowed in on the municipality in a steady stream.

Practically all the Ford buses are now being sold to operators in the cities and towns of the interior. A majority of the new buses now seen on the streets are mounted on truck chassis. Even though these machines are a great improvement over the Fords, still a further step is necessary, namely, the purchase of chassis especially designed for bus traffic. A truck chassis is lacking in the easy riding qualities so essential to the transportation of passengers in comfort.

Beginning some eight months ago, the lines established ran exclusively between the principal railway stations. Today they cover almost the entire municipal limits on all streets of dense traffic while numerous other lines are being projected.

Patronage of the existing lines is all that could be desired, since the buses run, as a general rule, filled to capacity on every trip. Not only has the bus idea taken a firm hold in Buenos Aires, but is also being rapidly developed in practically every city and town of importance throughout the Republic. In addition to the regular passenger lines, a number of high-class sightseeing cars are now in operation and others will be added as conditions warrant their purchase.

The Municipality has established the following conditions for granting concessions:

> The fare for a one-way trip and for transfers cannot exceed 10 and 15 centavos Argentine paper respectively. A 15 centavos fare can only be charged for a direct trip exceeding five kilometers and 20 centavos where a transfer is required.
>
> The holder of the concession must deposit the sum of $5,000 as a guarantee in the Municipal Bank to the order of the Mayor, plus an additional $500 for each kilometer of the round trip route comprised in the concession.
>
> The concession cannot exceed thirty years' duration.
>
> The Municipality is to receive from the concessionaire 5 per cent of gross receipts with an additional 12 per cent when these exceed $50,000 yearly per kilometer of the route. Likewise, the sum of $200 per annum per kilometer of route must be paid the Municipality to cover the cost of licenses, etc.
>
> The Municipality is to regulate the time-table of buses intended to handle workmen, to whom round trip tickets must be sold at the same fare charged by the street car companies. In addition the holders of concessions must comply strictly with the regulations of the Health Department relative to disinfection, etc.

Without doubt much yet remains to be done before the bus service in Buenos Aires will compare with that offered by the large cities in the United States, but progress in the right direction is now rapid.

It is believed that the time will come when street cars will no longer be allowed to enter the congested downtown section of the city, their place being taken by large and commodious buses, probably owned by the same companies which now operate the surface and subway cars. If the travelling public of Buenos Aires is to get the best out of the new transport service that the municipality has sanctioned, then the conditions under which concessions have been granted must be strictly observed. At present the buses are often carelessly driven at an excessive speed. They are almost invariably overloaded with passengers, and in their rush to compete one with the other sufficient time is often not given for taking on or unloading passengers with safety.

Certainly the time is at hand when American manufacturers of omnibuses should put forth their most decided efforts to take advantage of the situation in winning a firm hold on the market for this class of vehicles in Argentina.

Another development which is attracting considerable attention in the transportation of passengers by motor vehicles is the introduction of Yellow Car taxi service. Mr. James Warner, Jr., manager of the South American Division of the Yellow Cab Manufacturing Co., has spent some months in Buenos Aires organizing a local company that has begun to operate a fleet of Yellow cabs along precisely the same line as those in operation in the cities of the United States. The success of this new enterprise has been immediate, each machine earning a monthly average net profit of about $800 Argentine paper. The company started out three months ago with 12 machines and are adding to this number rapidly.

Six-Cylinder Essex Car Is Announced by Hudson

New powerplant is L-head type, with bore and stroke of 2⅝ by 4 in., providing piston displacement of 130 cu. in. Special body mounting and arrangement of spring suspension give low center of gravity. Lines similar to those of previous model.

HAVING gone into production on a new six-cylinder model Essex, the Hudson company has entered the ranks of concerns manufacturing six-cylinder cars exclusively. While the body lines of the new car are not unlike those of the four-cylinder model which it supersedes, mechanically it differs radically from its predecessor. A peaked radiator, blending into the straight lines, is a new body feature which stands out prominently.

Two body styles are being offered, a five-passenger phaeton at $850 and a coach at $975. The coach is similar in appearance to the previous Essex and Hudson coaches, and although it is mounted on a six-cylinder chassis of only slightly longer wheelbase, 110½ in., it provides increased leg room.

The powerplant is distinctly new, the engine being of L-head type. It has a bore and stroke of 2⅝ x 4 in., providing a piston displacement of 130 cu. in. The writer drove one of the new models over the roads around Detroit and found it to have a speed range of from 3 to 55 m.p.h. on high gear, with an acceleration of 5 to 25 m.p.h. in 11 sec. Although rather adverse conditions were encountered during the drive, the car held the road well, and this quality is attributed to the low center of gravity, resulting from the low mounting of the body, and to the arrangement of the spring suspension. As regards fuel economy, the car is claimed to do better than 20 miles to the gallon.

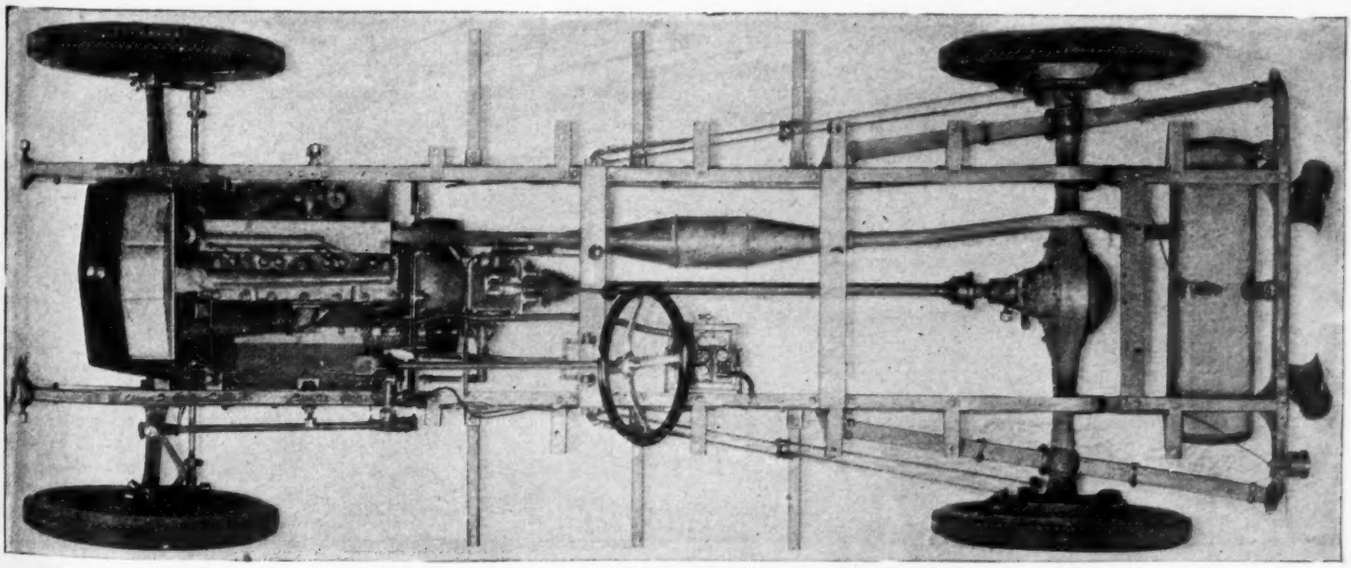
The six L-head cylinders and the upper part of the crankcase are cast in a block. The combustion chambers are in the detachable head and are of tapered section, with the high point above the valves. The pistons come to within 1/16 in. of the barrel top. Only a moderate compression is carried. The engine peaks at 3300 r.p.m. and at this speed, with the standard gear ratio of 5.6 to 1, gives a speed close to 60 m.p.h. The cylinder casting is a single flask type, open on the valve side, and is so designed that while the engine is completely inclosed, the entire valve mechanism, as well as other working parts, are readily accessible.

Four-Point Support for Engine

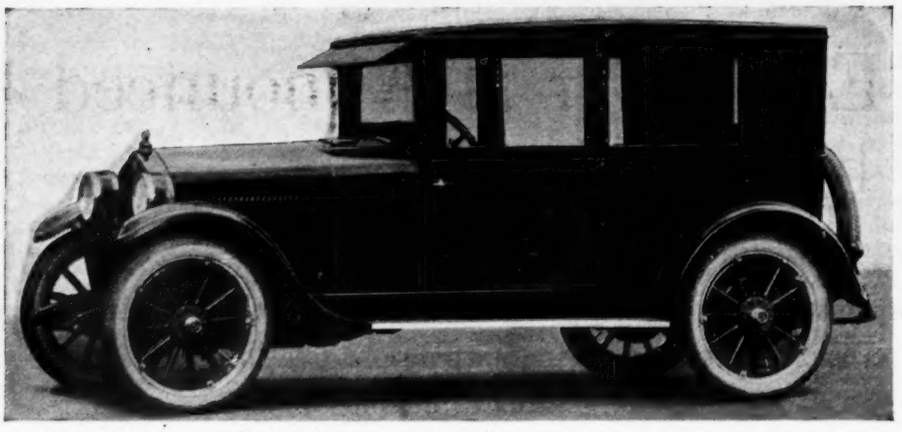
Four-point support is used, the rear supporting members being on the clutch housing, while the front end is supported by a plate bolted to the front end of the block and anchored to the frame side rail. The metal plate, acting as a frame cross-member, is secured to the block by all of the cap screws of the front end drive cover plate and by six additional screws.

Split pistons of Lynite, similar to those used in the four-cylinder model, are employed, and are 3 1/16 in. in length. There are three rings above the piston pin. The connecting rods are I-section drop-forgings, and the camshaft is a three-bearing type, 2⅛ in. in diameter, with bearing lengths of 1½, 1¾ and 1¾ in., front to rear.

Camshaft drive is by a Morse adjustable silent chain,



Plan view of new Essex chassis. Note splaying of rear springs, attachment of rear springs to rear cross member and provision of frame brackets for mounting body



The new Essex coach with metal panel rear quarter and mounted 2 in. lower to the ground

1½ in. in width. The chain drive is of the triangular type, connecting the crankshaft, camshaft and generator shaft, and also taking care of the oil pump and distributor. The camshaft is supported in three bearings and operates the valves through roller tappets. Guides and pins are ground all over. The valves are of 1⅛ in. clear diameter and are interchangeable. Valve adjustment is made in the usual manner, the valve cover plate being split vertically and the two halves held together by a leather strip which makes it possible for either half of the cover to be swung out without interference from the carbureter.

The flywheel is of pressed steel, ⅜ in. thick, with the teeth for the Bendix drive cut directly in its periphery. The entire electrical system, including ignition, starting and lighting, is American Bosch. Spark control is entirely automatic and elimination of hand control has simplified the control linkage and helped to give a "cleaner" powerplant.

Lubrication is by circulating splash. The oil pump is geared down in such a ratio that it will be effective even at the highest engine speed. Oil is fed from the pump to the splash trough under No. 1 cylinder. The splash from the connecting rod scoops practically empties the oil troughs at every revolution, throwing the oil into sloping channels or gutters on the sides of the reservoir and crankcase. The upper gutters feed the main bearings and the lower the oil troughs. Oil splashed from No. 1 trough is thus led into No. 2 trough. The splash from No. 2 oil trough feeds No. 3 and so on until No. 6 oil trough is reached, whence the oil flows back into the reservoir. The dippers are forged integral with the connecting rod caps.

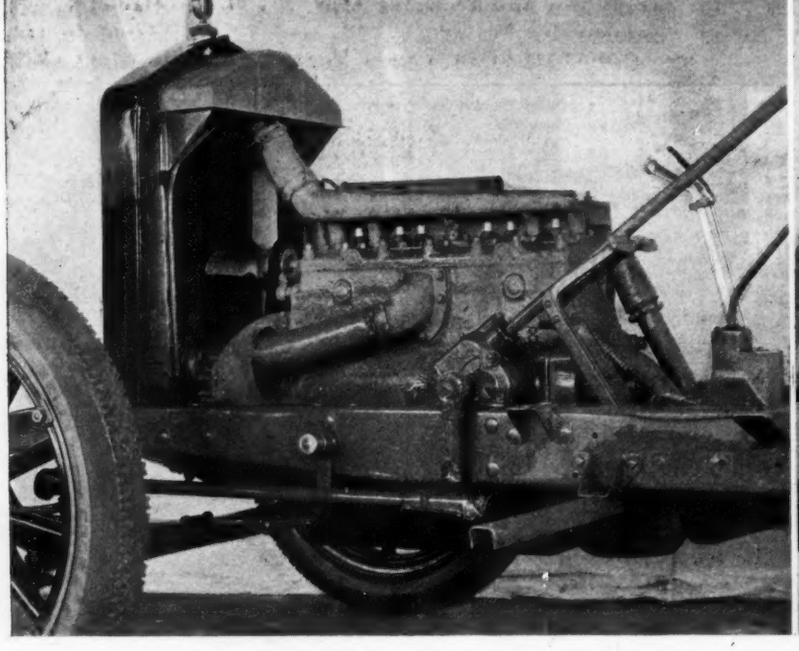
Cooling is by the thermo-syphon system, with hand-controlled shutters on the cellular radiator. A Motometer is provided as standard equipment. The fan is a pressed steel, four-blade unit, driven by belt from the crankshaft.

The drive from the engine is through a multiple disk-in-oil clutch with cork inserts, to a three-speed, selective gearset mounted as a unit with the engine. The gearset is housed in an aluminum case and is provided with Hyatt bearings on the main shaft and bronze bushings with circulating lubrication on the counter shaft. A transmission lock is provided as standard equipment.

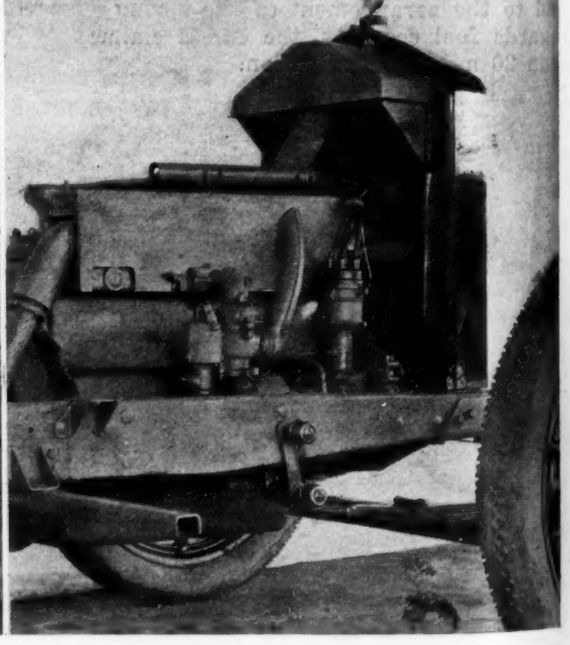
Final Drive

From the gearset the drive is through a tubular propeller shaft and two Spicer universals to a semi-floating rear axle fitted with Timken bearings throughout. This axle is quite similar to that of the previous model, but shim adjustment has been substituted for the screw type adjustment. The drive is Hotchkiss type. Fully adjustable brakes with drums of 14½-in. diameter and 1½-in. face are employed. The wheels are of wood and carry 31 x 3¾-in. cord tires. The spare tire carrier is now at the rear of the car.

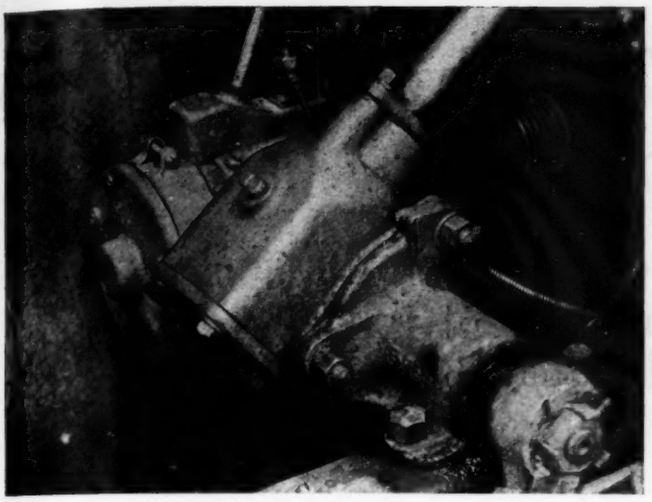
Steering is by worm and full wheel. The steering gear, which was designed especially for this car and is manufactured in the Hudson plant, is of unusually simple de-



Left side of powerplant. Note plate steel engine bearer at front



Right side of powerplant. Note sheet metal cover over exhaust manifold, forming a carbureter air heater

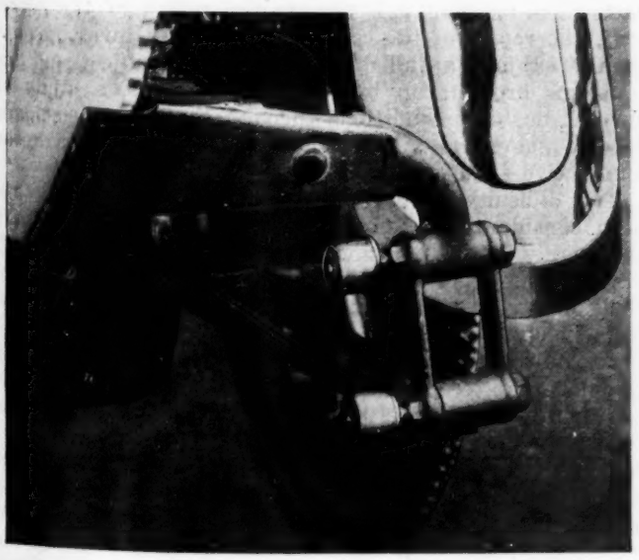


Steering gear of Essex, with spark and throttle connections eliminated

sign because it carries no control mechanism, the throttle control being mounted on the dash and the manual spark control entirely eliminated. The 17-in. steering wheel has a wood rim and an aluminum spider. A supply of lubricant for the steering gear is carried in an oil-tight housing, so that after it has been once filled with oil it remains self-lubricating for a long time. End play in the steering gear is taken care of by shim adjustment on the stuffing box. Elongated holes in the steering gear housing permit it to be turned to effect the eccentric adjustment for mesh between the worm and wheel.

The springs are semi-elliptic, the front ones being 36 x 2 in. and the rear 55 x 2 in. All shackles are adjustable for wear. The rear springs are set 48 in. apart at the rear and 32 in. at the front, and they are entirely outside the frame rails, the frame width being 28 in. The front springs are mounted directly under the frame side rails. The rear springs are eccentrated, 28 9/16 in. of their length being ahead of the axle and 24¼ in. behind. The frame side rails, which are parallel, are made of 5/32-in. stock and have a section 4½ in. deep. There are five cross-members.

One of the features of the car is the mounting of the body. The body sill lies outside the frame and is supported by six brackets. This is one of the factors contributing to the lowness of the car. At its highest point, the open car is only 5 ft. 10½ in. above the ground, and the front of the top is so low that a man of average height can look directly over it. The space under the rear seat provides rear axle clearance. With the frame side rails only 19 in. above the ground and the body dropped below the top of the frame rail, an attractive low appearance is secured.



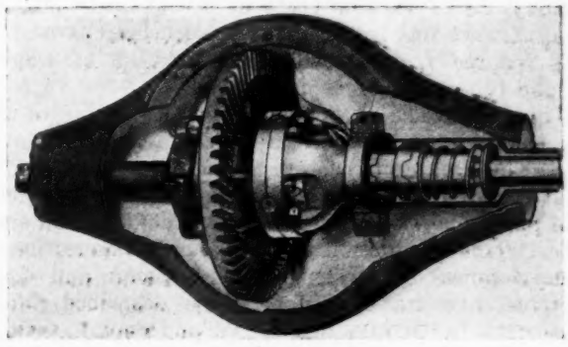
Showing spring connection to rear cross member of frame

The bodies are of pressed steel and wood construction. Less wood is used than in the previous bodies, pressed steel having supplanted it wherever possible, as in the seat supports, for instance. The bodies are finished by a low temperature baking process and the color will be a light blue with red wheels. The open car top is collapsible. Ordinarily it bolts to the windshield but top irons are supplied on demand.

The coach, while on the same lines as the previous models, has been improved. A steel rear panel is now used instead of a soft one, and both the roof and the seats are 2 in. lower from the floor. There is 6½ in. more leg room in the rear compartment. The cars are sold with complete equipment, including shutters, Motometer, transmission lock, rear tire carrier and ventilator.

Automatic Differential Lock Feature of New Driving Axle

A DRIVING axle incorporating an automatic differential lock is being manufactured by the Barty Axle Co. The differential lock consists of a jaw clutch with V-shaped teeth, which are normally held in engagement



Barty axle

by a coiled spring. Thus, while the car is being driven over a straight course, the rear axle is virtually solid and the car will not loose its traction even if one of the wheels should get onto very slippery ground. The angle of the clutch teeth and the force of the spring by which the clutch is held in engagement are so proportioned that the clutch will not open until the torque on the clutch parts becomes equal to one-half that required to slip one wheel on dry pavement. In turning a corner, the torque will instantly reach that value and the clutch will then open, making the wheels independent.

The advantages claimed for this axle are that it saves the fuel ordinarily wasted as a result of slipping of one wheel when traveling over slippery ground; that it will prevent stalling of the car due to the same cause, and that it tends to prevent side skids. One point that would come up in connection with such a lock is how the clutch jaws would stand up under the impacts received when slipping over one another while making a turn.

It would also seem that the clutch would have to act occasionally in straight ahead driving if the two tires were of somewhat different diameter owing to one being new and one nearly worn out, or to the two being inflated to different pressures.

Business Economics Taught to Workers at Delco Plant

Purpose of new course is to give employees a clear conception of the structure of industry and to develop individual thought.

By Harry Tipper

A DEFINITE, carefully planned effort is being made by the Dayton Engineering Laboratories Co. to give all of its employees a clear conception of the fundamentals of business economics. Following several years of successful educational work along shop training lines, this organization has undertaken a new course having to do with the structure of business. The need for such instruction has been demonstrated already in the relatively short time the lessons have been under way.

Delco executives have found that, as in other plants where similar work has been carried on, otherwise intelligent men often have a profound ignorance of the basis and functions of various parts of the business structure. This ignorance has led to gross misconceptions as to the profits secured from industry, the relation of wages to costs and the causes of depressions.

To illuminate the facts and to plan a course of study along sound lines has been a task of considerable difficulty. The Delco instruction has a background of successful training in shop problems and methods which included many questions not usually touched upon in similar courses. This instruction was built up in connection with the development of foremen, sub-foremen and factory executives, and its operations were described fully in AUTOMOTIVE INDUSTRIES of Aug. 31 and Sept. 7, 1922.

Classes for the course in business organization are divided into groups. Each of these groups goes through the entire work of organizing a company, providing the stock, building the plant, laying out the manufacture of the product, the organization for its sale, etc. They are obliged to consider the question of loans; to learn something about the conditions of business loans and, therefore, to evaluate properly cost records, accounts and other recording departments of the business.

Employees Are Interested

The course has been eminently successful. The men who engaged in the work of developing these different companies have taken a very intent and studious interest in the material presented. They were brought into contact with all kinds of business problems existing outside their usual working surroundings and they began to see the necessity for these different operations in the structure of a business organization.

This year and for two years more the Dayton Engineering Laboratories Co. will carry on education in the fundamentals of business. This course will deal with those causes and tendencies which lie behind the business structure itself. The general policy governing this development is foreshadowed in the preliminary statement accompanying an outline of this course:

"The mere mention of the study of economics carries with it the impression that the fundamentals of the subject can be obtained only by those technically trained.

"This, however, is not the case. The fundamentals of economics—'the science which deals with the activities of man in gaining a living'—can be learned and applied by anyone who desires to give time and thought to the subject.

"It is the purpose of the course, 'The Fundamentals of Business (Elementary),' to touch rather fully on the non-technical phases of the study of economics. Inasmuch as these are fundamental factors which govern the successful operation of any business, it is well that every person who aspires to positions of greater responsibilities should know the principles of economics.

"Thus, those who are engaged in this study need not be disturbed at the name 'economics,' but should realize that this study gives them a splendid opportunity of obtaining knowledge of the fundamental principles which govern the operation of all business enterprises."

Organization Difficulties

Primarily this study of economics will relate more particularly to waste in industry, due to the lack of intelligence in the handling of industrial problems. The same general methods will obtain in this work as have been used previously.

Classes will be organized by groups with committees, divided to suit the subjects, with a president of the class group and a secretary for each class group. The order of each class meeting will require the report of the secretary, the report of the committee as to its investigations on the subject, a full discussion of the subject and the problems brought up by the investigations, a study of current business conditions through the use of economic reports and charts, and the application of these data to the automotive industry.

The difficulty in organizing this course properly has been considerable. Subjects involved will be considered thoroughly by many business executives of great responsibility. There are comparatively few business men who could pass a real examination on the entire range of subjects involved in this course.

The object has been to arrange matters so that the study would be non-technical, illustrative and suggestive. This has required very careful study and examination by those in charge of the course so that the material can be arranged to meet the thinking of the men as much as possible and yet remain practically correct in its substance. In other words, it has been necessary to bring this material within the range of illustration and thinking to which the men are accustomed without changing its force or leading to any misconceptions.

Some of the subjects to be included in this course are as follows:

Introduction to Economics.
Primary Industries.
Manufacturing.
Statistics.
Graphic Presentations.
Production.
Distribution.
Railroad Transportation.
Automotive Transportation.
Power Transmission.
Marketing.
Consumption.
Enterprise and the Business Organization.
Financing of Production.
Organizing Function of Prices.
The Determination of Prices.

Every manufacturer will recognize the boldness of this design as relating to the education of foremen and factory executives. It is no easy matter to secure texts that are sufficiently free from technique to enable the executives to arrange a course which will be clear, interesting, and provide the proper perspective on these problems of industry. A good many successful attempts have been made to show the relationship between capital and labor, raw material and other organizing costs, and several successful efforts have been made to relate these costs to prevailing tendencies and prices. These discussions, however, have not treated general fundamentals of business. So far it has been considered practically impossible to teach such fundamentals to a group of this kind.

The work which has been done by the Dayton Engineering Laboratories Co. in its previous educational development leads to a belief that this more difficult undertaking will meet with an equal measure of success. The work is of considerable importance, as it will open up a means of education designed to combat the more violent and difficult misconceptions of business which affect the relations between the employee and the employer in most plants and which find expression in many other ways in civic and national affairs. The development of a right understanding of business among the foremen and subordinates of a factory is perhaps the most important job in maintaining efficiency, increasing production capacity, and removing the ordinary causes of labor difficulty.

Unfortunately a large part of the educational work attempted by factories has had no continuing policy beyond the improvement of the technical value of the workers and foremen, so that nothing effective is done to improve the general understanding and outlook on industry itself.

Policy Gradually Broadens

The Delco experiment has been of unusual interest because it has continued a policy of gradually widening the outlook and deepening the interest of the men, starting with the immediate surroundings and ending up with the fundamentals behind the business structure. This last program, of course, offers so many opportunities that it can continue for a good many years, building a closer continuity of ideas and thoughts the longer it is pursued and the more intimately the study is conducted.

In the ordinary educational processes of national and local development we found out long ago that progress is made from the immediate tools and surroundings to the more abstract and less tangible subjects of study. This has been the method of development in the Delco plant. Each topic has been worked out very carefully and all of the executives of the factory have been intensely interested in the work, not only in sentiment but in active cooperation.

The outstanding features in the Delco development are:

(1) The factory executives carefully studied prevailing information in connection with the subject to be discussed. A number of them made long trips to consult with the best available men.

(2) Having digested the matter themselves, they wisely arranged to study the particular conditions of their factory and the particular problems of their own key men.

(3) Arrangement of the classes has been carefully worked out to provide the men with problems of study and problems of operation so that the principles can be woven into the practice, becoming tangibly connected with the man's own work and his own place in the industrial field.

(4) The object of the work is not to get the men to accept any special theories or any text matter introduced into the course but to make the course sufficiently illustrative and suggestive to give them a good groundwork for their own thinking so that they will be able to examine theories presented to them from their factories as well as theories presented in this course with a good basis of knowledge.

This last is perhaps the most important element in the whole thing.

Men will do their own thinking.

Any attempt to get them to accept a particular theory or abstraction in connection with business is likely to lead to their loss of interest because they will consider such material as propaganda.

The aim of the factory executives of the Delco plant is to present what they believe to be the sound relations in the fundamentals governing business, arranging the study so that the man can see his obligation and so that he will be set to thinking, giving him new direction and opportunities for thought instead of attempting to place his thinking in accordance with certain prescribed theories advanced by the company.

Eliminating Fatigue

By William R. Basset,
President of Miller, Franklin, Basset Company, Inc.

IT has been calculated that, on the average, every workman, each day, turns out 20 cents worth of product less than he might, because of unnecessary fatigue. Multiply that by the number of workers you employ and then by the number of working days in a year and you will be astonished at the total cost to you.

Much of this fatigue can be eliminated.

In one plant, as a result of a study, the working day was shortened 45 min., proper rest periods allowed and methods of doing work improved. The result was an increase of 35 per cent in the daily production. Similar results have been achieved in many plants.

The common causes of unnecessary fatigue are:

1. Poor light.
2. Awkward position.
3. Noise.
4. Improper tools.
5. Too high or too low speed of working.

I have seen production of bench workers increased 22 per cent merely by raising the height of the stools 2 in. Unnecessary noise is very tiring.

Anyone doing an operation over and over tends to strike a rhythm of movement, which, when found, greatly reduces the fatigue. Inability to find the proper rhythm may result in greatly reduced production. For this reason a rapid pace may be less tiring than a slow one, if it meets the rhythm of the worker.

For the sake of increased profits, if for no other reason, it pays to study the methods of doing work, so that needless fatigue may be eliminated.

Engineers See Tests and Discuss Brakes at Indiana Section Meeting

Chester S. Ricker outlines advantages of hydraulic system. W. S. James tells of government experiments. Decelerometer described and operated.

FOUR-WHEEL brake tests in the afternoon and an attendance of 300 local and visiting engineers at an evening session devoted to discussion of the same topic marked a particularly interesting meeting of the Indiana Section of the S. A. E. held in Indianapolis on Dec. 7. The tests were conducted on one of the asphalt paved city boulevards, and involved fourteen cars, four of which were equipped with various kinds of two-wheel brakes and ten with four-wheel types.

The evening gathering listened to a description of the new decelerometer and an outline of recent brake investigations by W. S. James of the Bureau of Standards; a paper on hydraulic four-wheel brakes by Chester S. Ricker, general manager, Duesenberg Motor Car Co.; a discussion of the outstanding features of the Perrot system of mechanical four-wheel brakes by John R. Cautley, vice-president and general manager of the newly formed Perrot Brake Corp. of South Bend; and a witty talk on the brake question by Howard Marmon, vice-president of Nordyke & Marmon.

W. S. James was on hand with his decelerometer during the tests, and the cars were checked by this and other instruments, as well as for distance stops at various speeds. All cars made two trials, one at 30 and the other at 40 m.p.h., while some registered stopping ability at 20 m.p.h. The average distances in which the cars were brought to a stop from speeds of 20, 30 and 40 m.p.h. with two-wheel brakes were 30, 74 and 122 ft., while the four-wheel braked jobs stopped in average distances of 12, 31 and 54 ft.

A crowd of at least two hundred engineers, dealers and others witnessed the events, which were finally called off because of nightfall.

Street Flooded for Tests

Near the end the street was flooded, and some four-wheel brake jobs showed their ability to come to a stop on the wet pavement without skidding from a speed of 50 m.p.h. It was said to be the most comprehensive series of tests ever held in the country. The tests were organized and conducted by Col. W. G. Wall of National; O. C. Berry of Schebler; F. F. Chandler, Ross Gear & Tool, chairman of the section, and W. S. James of the Bureau of Standards. They were non-competitive demonstrations.

W. S. James, called on for impromptu remarks on his study of four-wheel brakes, said that he was extremely gratified at the progress which had been made since the Spring Lake meeting. He sounded a warning to the trade and to the sales and advertising men particularly to soft pedal the "short distance stopping," and to spend more time selling four-wheel brake *safety* in stopping. This is the real function of the new brakes in ordinary use, and the stopping in extremely short distances is an emergency function which, while most useful, is not the factor that will most please car owners.

He and others called attention to needed development of front spring design; and he showed that in stopping by the brakes the weight of the car shifts to the front wheels, as much as 80 per cent of the weight of the car coming on the front wheels with four-wheel brakes that actually take hold.

J. A. C. Warner, assistant research manager of the S. A. E., came from New York for the meeting, and a party of fourteen, led by John H. Hunt of the General Motors Research Laboratory, came from Dayton in a 22-passenger bus owned by the laboratory.

Brake Problems Listed

Following is a digest of some of the main points brought out in Ricker's paper.

The principal problems encountered in the design of front-wheel brakes are as follows:

1—Connection between brake pedal and front brakes.
2—Rendering application of the brakes easy.
3—Equalizing brake application.
4—Rendering the adjustment easy.
5—Providing the necessary axle strength.
6—Preventing interference with steering.

Numerous difficulties are encountered in designing a suitable mechanical connection from the brake pedal to the front brakes, because account must be taken of the effect of spring deflection, the effect of axle rotation under brake torque and the effect of wheel deflection in steering on the brake application. The front brakes must be independent of the first two factors (axle rotation and wheel deflection), otherwise there is danger of the brakes becoming locked, and of chattering occurring, especially, as a result of axle rotation. With hydraulic transmission of the force of application, all these difficulties are eliminated. On many cars a displacement of the front axle due to an accident will render the brakes and the car unmanageable; this is impossible with hydraulic brakes, where the pressure tube is secured to the axle through flexible joints.

These joints are of rubber, reinforced with steel tubing. The Duesenberg company recommend that they be replaced every two years, because the rubber loses its flexibility, but some cars that have been in service for three years still carry the original connections. A tubular front axle is used, which permits of carrying the brake connection inside the axle and making a simple connection to the pivot pin which is fast in the axle end. Thus the brakes are rendered independent of axle rotation under brake torque and of spring movement on rough roads.

Ricker claimed that the freeing of the outside wheels

on turns, where Hooke type universal joints are used in the brake connection, is a detriment rather than an advantage, and in support of this cited the fact that such makers as Isotta, Locomobile, Minerva, Delage and Mercedes, "who can afford to go into detail refinement of front-wheel brakes," provide linkages that insure uniform brake application to the two front wheels for all steering angles.

The problem of rendering application easy is one which confronts every engineer adopting four-wheel brakes, because it requires twice as much effort to apply four brakes as to apply two. The problem can be solved either by providing increased leverage or by resorting to power operation. On the Duesenberg car a toggle mechanism is made use of, which gives rapid motion of the brakes during the first portion of the pedal stroke, together with great pressure multiplication when the brakes are on. If a pressure of 55 lb. is exerted on the pedal throughout the stroke, the oil pressure, to which the force of brake application is directly proportional, is 100 lb. per sq. in. at the beginning of the stroke and 500 lb. at the end.

Difference in Performance Shown

One difference in the behavior of mechanically and hydraulically operated brakes was pointed out. Owing to the fact that with mechanically operated brakes stiff return springs are generally used, to overcome the friction in the joints of the linkage, when pressure on the pedal is released, the pedal follows up the foot with considerable pressure. With the hydraulic brake there is only the friction of the shoes to be overcome, and the only return springs used are those on the brake shoes, which are comparatively light. With the toggle mechanism the pressure of the pedal on the foot during the return motion is practically uniform throughout the stroke. Owing to this substantial uniformity of pressure throughout the stroke, novices on hydraulic brakes often gain the impression that these are harder to operate and that they do not release quickly, both of which are false.

The other method of reducing the effort required to apply the brakes consists in the use of servo devices. Hispano-Suiza, Crossley, Renault and Sunbeam all use a slipping clutch type of servo mechanism, while Rolland-Pilain and Fiat use hydraulic pressure from a power pump and Delage and Rolls Royce are said to contemplate the use of similar systems next year. Ricker said he understood that Rolls Royce and Fiat both used direct mechanically operated brakes on the rear wheels and brakes hydraulically applied by power on the front wheels, and he expressed the opinion that many mechanical servo devices were dependent upon the speed of the car and could not be depended upon to stop the car from a speed of 1 m.p.h. at 1 ft. from a precipice. He referred to hydraulic servo brakes as an ultra refinement but very expensive, heavy and complicated.

Uniform Application Desirable

Considerable emphasis was laid in the paper on uniform application of the brakes, which was said to be dependent upon equalization of the pressure of application, equality of the friction coefficient and good design. With the hydraulic system the pressure of application is accurately equalized, and Ricker ventured the opinion that this was the reason Rolls Royce, Fiat and Delage had adopted the hydraulic system. Another advantage is that the hydraulic lines can be firmly anchored to the chassis and axle and therefore cannot rattle.

Maintaining the friction coefficient constant is important, Ricker said, and for that reason none but fully inclosed front brakes should be considered. He mentioned that even with inclosed brakes it is possible to notice a slight tendency of the wheels to pull to one side or the other on the morning after a day's operation in the rain. This tendency can be overcome by holding the brakes on for a minute or two while the car is in motion. Practically the same effect results from a difference of 5-8 lb. in the inflation pressures of the balloon type front tires. Distortion of the brake drums under the pressure of the shoes is prevented by the Duesenberg by the use of ribbed forged steel drums which are machined down from a forging weight of 105 lb. to a finished weight of 16.5 lb.

Easy Adjustment Important

Ricker mentioned the importance of easy adjustment and said that only a few days ago he had occasion to drive a four-wheel brake car in which the pedal would hit the floorboard before the brakes were fully on, although the car had been driven only 1075 miles all told. With the hydraulic brake the adjustment is automatic, and the braking effect is graduated, the first movement of the pedal giving a smooth, easy stop, which is most desirable in normal operation, while the last two inches of pedal motion bring into action a booster piston, which effects an emergency stop.

The Duesenberg front axle is tubular, the ends, from the spring seats outward, being drop-forged, but also tubular in section. This construction costs more than a plain I-section drop-forged axle, but is used because the tubular section combines the least weight with the greatest strength under both bending and torsional forces. Late European models, including the Fiat, Sunbeam, Daimler, Lanchester and Maudslay, also include this feature of a tubular section from the spring seats outward.

Ricker asserted that the effect of front-wheel brakes on steering is not as serious a matter as some people would have us believe. It is claimed that when the front wheels are locked by the brakes while making a turn the car is out of control. This he admitted, but he argued that if the rear wheels of a car fitted with two-wheel brakes only were locked on a turn, the car would be equally out of control, and locking of the rear wheels occurred when the total retarding force was only half as great as locking of the front wheels with four-wheel brakes.

Doubtful Points Cleared Up

Following are some points on which misapprehension exist, Ricker said, and he made an attempt to clear them up.

A car fitted with four-wheel brakes can be stopped as gently as any other machine; he had learned of only one rear-end collision, and that without damage to either car.

The car can be steered and driven anywhere with 200-300 lb. pressure on the brakes, although the steering requires a little more effort under these conditions.

Four-wheel brakes greatly reduce tire wear and equalize the wear between all four wheels.

The braking effect on both front wheels should be equal, because, even though a fully loaded car usually carries more weight on the rear wheels, the transfer of weight from rear to front wheels due to the application of the brakes practically evens this out, and if the front braking effect is reduced there is danger of the rear wheels being locked and the car being thrown into a rear wheel skid.

In mountainous country four-wheel brakes are a real necessity, and in Switzerland they are now compulsory.

IN a brief pamphlet entitled "Patents and Their Sale," Brayton G. Richards gives a useful, condensed statement of fundamental patent law and some of the most important rules relating to it, especially those affecting the value of patents and, consequently, their sale.

Disk Type Propeller Shaft Brake Used on New 2½-Ton Truck

Revolving part of novel unit is hollow and has curved vanes which pump considerable quantity of air for self cooling. Double-reduction axle of own make furnished, with worm drive optional. Other parts similar to those employed in larger sizes.

AMERICAN La France Company is in production on a new truck of 2½-ton rated capacity. This is similar in most respects to the 3½- and 5-ton models described in these columns April 26, 1923, but has a different and quite novel form of propeller shaft brake. It is fitted with a double reduction instead of the worm gear axle used on larger models, although this axle is so designed to accommodate a worm and worm wheel without material change in the housing if the purchaser prefers the worm drive.

A cast steel disk, with two walls joined by ribs curved to act as the blades of an impeller which pumps a considerable quantity of cooling air, forms the revolving unit of the brake. This disk is splined over the tail shaft of the gearset and is so fitted as to float axially on this shaft. This helps to prevent dragging when the brake shoes are disengaged and insures equal pressure against the shoes when the brake is applied.

By reference to the drawing, it will be seen that the brake shoes are themselves in the form of disks with the center portion cut away to form annular rings. These rings are parted in the horizontal plane and each half is held by three bolts to a heavy cast ring which is itself carried in a trunnion with vertical axis.

Trunnion bearings are formed in a second pair of ring castings which are hinged at one side to a heavy transverse frame member the forward end of which is bolted rigidly to the gearset housing.

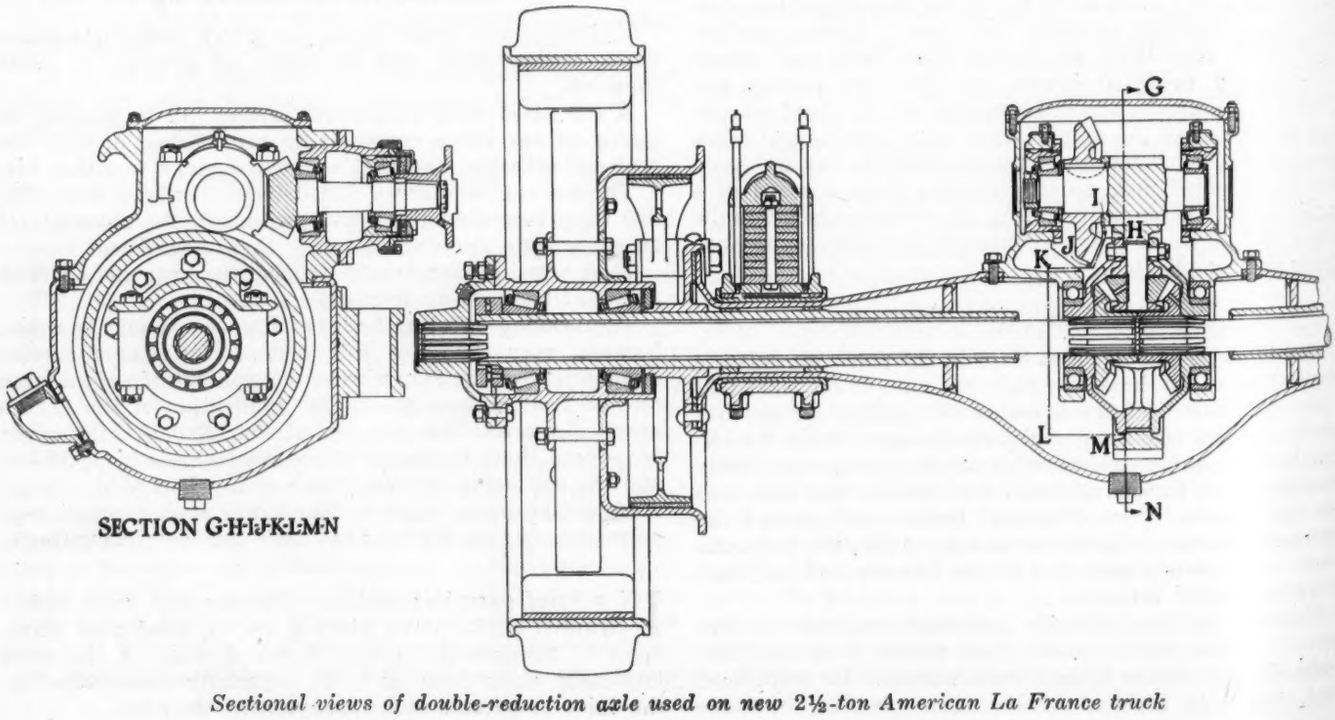
At the other side of the trunnion rings is a toggle which serves to draw the two trunnion rings together when the brake pedal is depressed. In so doing the brake disks are forced into contact with each side of the revolving disk and thus furnish the desired braking effect.

Even Braking Assured

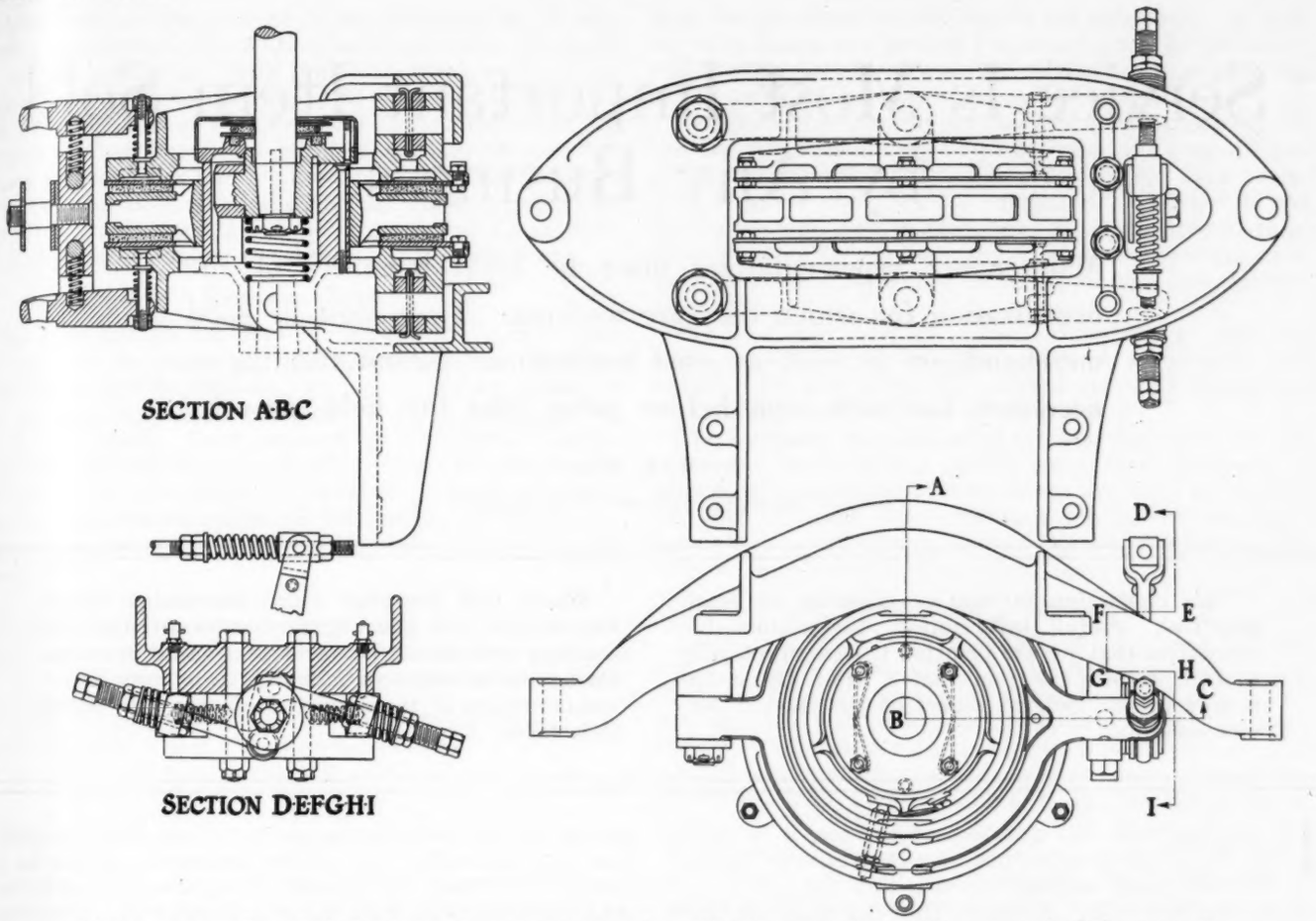
The trunnions, together with a small amount of play purposely allowed at the hinge of the outer trunnion bearing rings, insure an even bearing over the braking surfaces.

Two important advantages are gained by this form of brake construction: effective cooling of the revolving disk through the medium of the air which constantly is circulated through it, and easy removal of the brake shoes when facings require renewal. A large wearing surface also is provided.

Each of the four brake shoes can be removed by taking out the three bolts which attach them to the rings. They are then easily and quickly refaced with half of an annular



Sectional views of double-reduction axle used on new 2½-ton American La France truck



Disk-type propeller shaft brake and heavy cross member which supports it and the rear end of the gearset

ring of asbestos brake material made up into the same form as clutch facings. It is claimed that a good mechanic can remove and replace the shoes in less than a half hour.

Brake shoes are made from high carbon sheet steel to which is riveted the asbestos brake lining. The steel plates seat against a number of lugs which are cast on the rings to which they are bolted and are faced off to give an even bearing against the steel plates. This permits of air circulation on both sides of the brake shoes.

New Features in Rear Axle

The double reduction rear axle is of quite conventional design, as will be seen from the accompanying drawing, but has some features worthy of note. The housing is a heavy steel stamping made in two halves welded together at joints in the horizontal plane. Rings welded inside this casing serve to support the steel tubular extensions which surround the full floating live axles.

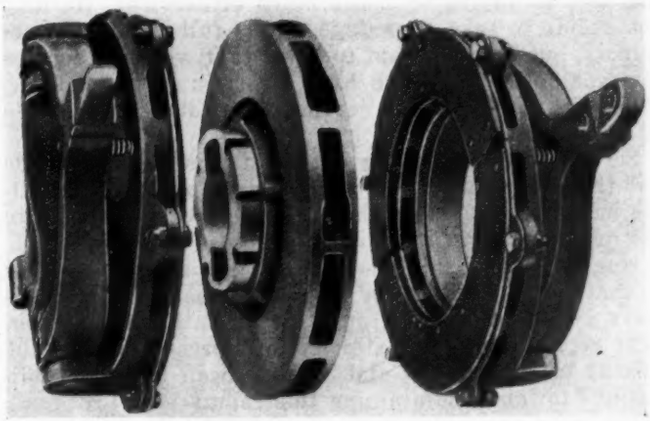
Spiral bevel gears are used for the first reduction. The bevel pinion shaft is carried in two Timken bearings and is held in fixed relation to its housing. Adjustment between the bevel pinions and ring gear is effected by axial adjustment of the shaft on which the ring gear and the spur pinion of the second reduction are mounted. This adjustment is made by a threaded collar.

Timken bearings are used also on the ring shaft and at the wheels but the spur gear and differential spider are carried on ball bearings.

Outer ends of the axle housing are flanged to receive hub castings and brake anchorage. Expanding shoe hand brakes of the usual form are employed. The axle is fitted with radius rods and torque arm similar to those used in the larger sizes.

Other parts of the 2½-ton model are substantially identical with those in the 3½-ton size. The same engine, clutch, front axle and steering gear are employed. The gearset also is similar.

As indicated above, the rear end of the gearset is bolted up solidly to the same heavy frame cross member which carries the brake and thus becomes in effect a unit with this member. The forward support of the gearset is a spherical trunnion which is bolted up under another cross member. This is the third point of support of the gearset-brake unit. The gearset is easily dropped without disturbing other parts of the truck. Shifter forks and their operating shafts are assembled to the gearcase cover so that they are lifted out as a unit when cover is removed.



Units which are employed in disk-type propeller shaft brake which is the novel feature of the new 2½-ton American La France truck

Service Is Most Important Item Sold by Any Business

Maintenance representatives must be loyal members of the organization for which they are working. They must be good merchandisers as well as good mechanics. Sound training is necessary for such men before going into the field actively.

By W. L. Wise*
Service Manager, National Cash Register Co.

This discussion of service contains so much practical, useful information for automotive executives that we are printing it here practically in full, despite the fact that a brief digest appeared in our general report of the Dayton service meeting.

Wise's talk provoked much discussion among the service men and engineers who attended the meeting and should prove of real value in stimulating the automotive industry to a more active consideration of the service problems with which it is faced.

IN dealing with this question of service, it is recognized there is a difference in many respects between National cash register service and the service of automobile concerns. However true this may be, there is also the one important fact that any service is offered for the benefit of the user. And the user today is just a little bit more concerned over the value he receives for his dollar than ever before.

In most cases it is the service man who represents the company.

The company, therefore, becomes just as big or just as small as the individual serviceman. He may understand thoroughly the ideals of the company, or he may be indifferent. The user receives the same impression of the company which the service man holds.

Perhaps the most important thing that any business sells is its service. Nothing can be of greater value. For instance, you, in the automobile business, are selling so many miles of service and not an automobile. Of course, there are such incidentals as easy riding, low gasoline consumption, comfort, but in the final analysis the user is buying so many miles of service. He may not decide to take advantage of the full period of usefulness, but he does want to know that when he decides to trade or sell it, it will have a certain number of service miles to run. These service miles establish its trade in or sale value.

Service means carrying out the terms we have made and the obligations we have taken upon ourselves in selling our product. The right to this service is included in the price of the article when it is sold.

One of the first things we try to teach a repair student is that he is working for a good company and can always be proud of being engaged in National cash register repair work. We also try to impress him with the quality of the product and in turn dwell upon his obligations towards maintaining this reputation.

We take particular pains to explain the company's reason for the different decisions which effect his dealings with either the user or the company. Before he is permitted to approach a user to explain our periodical inspection plan, he must make a number of approaches to his instructors.

The serviceman is either making or breaking his company's reputation. We also have our men understand that the company vouches for their ability and their honesty. The company goes further and advertises the feeling they have toward their servicemen.

Every National cash register which leaves the factory has pasted in the cash drawer an identification card of the repairman and an explanation of the care with which we select our men, the training they receive, and why the user should rely only on accredited National cash register repairmen for service. Further, we again draw attention to National cash register service at the time we mail the customer's last installment receipt.

In our direction books we again emphasize the importance of having trained National cash register repairmen do the work.

We try to leave the thought with the customer that we are proud of our service and our service men. A company can only be proud of its service when it has spared no effort to make it the best.

Making Service Valuable

Our entire effort in selling service is to make the customer appreciate the need for National cash register service and to make the repairman worthy of giving this service. The repairman is also taught he is not treating the user fairly unless he teaches the user the value of our service.

Our experience has taught us that 50 per cent of the training of the repairman is mechanical, the other 50 per cent the treatment of the user and the sale of his services.

The commercial training of a repairman progresses with his mechanical training. We appreciate the repairman experiences all the grief. He must be taught

*Paper read before the joint service meeting of N. A. C. C. and the S. A. E. at Dayton, Nov. 20, 1923.

to overlook the troubles he is experiencing so he can meet the customer with a cheerful disposition. He must be taught always to think well and speak well of his product: in time of emergency to keep his balance, to sell his users rather on how small and unimportant the trouble is, than how big a job he can offer; to work for a user and consider him his boss, for in the last analysis it is he who is keeping the factory chimney smoking. Further, to take a pride in the betterment of his product by giving the company the value of his suggestions.

Reasons Given

We endeavor to put into his mouth the reason why the company is guided by different principles. We furnish him a service manual. We try to set up scenes in our commercial classes the same as he will meet in his work in the field. He is coached by experienced repairmen who not only have profited by their own experience, but what they have gained from others. Each man must pass a certain examination on his commercial ability before he is sent to the field. His training takes up such subjects as:

1. Planning his work.
2. Records that must be kept.
3. Answering calls—service over the telephone.
4. Installation of registers, both mechanical and functional.
5. The care of registers from a user's standpoint.
6. Selling a user on periodical inspection.
7. How to collect expense on repair calls.
8. How to estimate work.
9. How to explain an estimate to the user.
10. Explanation of our guarantee.
11. Meeting user's objections.
12. How to explain the quality of our service.
13. The necessity of using our parts.
14. The answers to a user's objections on any phase of a repairman's work.

Trouble Due to Neglect

In our analysis of complaints we find a large proportion of the trouble is due to neglect or carelessness. In order to eliminate this as much as possible the user must be taught first, the proper use of the mechanism and the care it should receive in order to maintain its efficiency; second, that his register, like any other mechanical device begins to wear as soon as it is put into use, and in order to hold this wear to a minimum, it must be gone over periodically by one of our trained repairmen.

It is not always an easy matter to sell the user on this periodical inspection. First of all, in the operation of the register, he sees only a certain number of functions which he obtains, and is entirely unfamiliar with the mechanism required to bring about these results.

Naturally, on the other hand, it is the problem of the National Cash Register Company to see that the lives of our registers are just as long as possible. We have to guard the user against his neglect because when we sold him a register we promised it would last a business lifetime, and it is encumbent upon us to use every effort to see that he gets the maximum amount of use.

Aggressive Attitude Assumed

It is recognized that to leave the selling of this periodical oiling, inspecting and adjusting entirely up to the repairman places him in the position of one seeking work rather than the position of a man who is offering some real benefit.

To eliminate such a feeling on the part of the user the repairman is taught to say, "My company advocates this," instead of "I suggest it." To assist him, we have written our instruction books to him in such a way that they can be shown to the user in the approach. In fact we have found our service literature, such as Bulletins and Service Letters of material advantage in explaining to the users the company's ideas on service.

Remembering that our service has a direct bearing on the cost per year and that cost per year and long life together determine values at any period, we take every precaution to see that no repairman endeavors to do any more work than is essential. To be assured of this, we teach him in our Repair School the essentials of a mechanical job, measured in terms of the best factory standards.

We train him how to inspect a register to find out what is wrong with it. We outline a systematic procedure. We also have this written up in an inspection book for his reference at any time.

The company sets the price for his work and for the parts, and we make it a part of our service approach to let the user understand these prices are fixed at Dayton and that we endeavor to maintain his service efficiency through our field examinations. Also, we check the individual job from our mechanics' reports.

Satisfaction Necessary

These reports give the trouble and its causes and the remedy which he applies. If we find his reports are about the average, we do not question them. If, in our estimation, the repairman is not measuring up to standard performances, a refund is given to the customer and the repairman either receives further instructions from one of our field men or is brought to the factory for a review.

Our prices per hour include whatever tools are necessary. If it is a buffing or grinding job, he is not to charge for hand buffing or filing. We try to make this plain in our service literature. We also furnish a list of the duties and obligations of a repairman in pamphlet form, which he is asked to submit to the user in order to establish that bond of confidence which is also necessary in our dealing with service.

No man is expected to give an estimate for a job until he has thoroughly investigated to find out just what work is necessary and what parts need to be replaced. If it is a job which should be handled in the repair department, the user is given to understand that he will be given a further estimate covering all the work done, and that he will be shown what adjustments are necessary on the register, what new parts are to be added and his consent obtained before the repairman proceeds with the work. We feel that the man who is spending the money has a right to know how every cent of it is to be spent, and this is not from a letter or visit of a repairman, but from an actual examination of the machine.

Visitors Welcome

We encourage the visit of our users to repair departments. We try in every way to eliminate the "No Admittance" idea.

Estimates are given as accurately as possible. However, the user is given to understand that it is purely an estimate and that we will charge only for time and material. If the work can be done cheaper than the estimate it will be done, if more, we expect him to pay. We try to leave the impression with him that our interest is not in piling up repair work, but in keeping his register going at the least possible cost. Further, that the user who takes care of his register can look for small repair bills, whereas if the register is neglected or abused, that the bill will be correspondingly increased.

If our service is offered as the company expects it to be sold, there is no reason why any user of a National cash register should rely on an outsider for service.

We have these advantages:

1. Trained repairmen who have spent from 12 to 15 months in our training school.
2. We learn from a review of our field troubles what is likely to develop in our product. Every manufacturer knows the weaknesses and abuse which his product must stand better than anybody else. Consequently we can fortify our repairmen on these adjustments.
3. We are constantly improving mechanisms and methods. Many of these improvements apply to registers already in the field. Our training both here at the factory and in the field is offered with the idea of giving our users the advantage of the latest factory developments.
4. Use of National Cash Register parts manufactured by our $3,000,000 investment in tools and a similar investment in special machines. No parts for National cash registers are so accurate as ours, nor is as much attention given by the outsider to the selection of the material for these parts as we. Modern tools and modern machinery enable us to offer National cash register parts at the lowest price consistent with good workmanship.
5. And what is most important is that our service has the interest of the manufacturer in the quality and life of his product.

If our repairmen thoroughly understand and realize the truth of these five points, we feel we shall have no difficulty in selling our users on the kind of service which is best for their interest.

Perhaps it will be argued that this selling of service takes time. This is true, but time spent among our users wins their confidence, which means a reliance on us for future work. It would be a mighty big thing for the National cash register business as well as the automobile industry to have all of its users thinking well of its product and looking toward the manufacturer entirely for service. How often has the manufacturer been given the blame for faulty construction when in reality the fault lay with either the ignorance or carelessness of the repairman.

C. O. D. System Used

The repairmen are instructed to collect at the time the repair is finished, for by so doing we will be certain that the charges have been explained and that the user has been sold on their justice.

Periodically, service men get together in the field to talk over service literature sent out by the company and to bring up their troubles from a mechanical and a commercial standpoint. New devices are shown and explained, for our first thought is to make our service good and, secondly, to see that our repairmen understand that it is good, so that when they approach a customer they are in position to sell it. In these conventions they are taught the strong points of the mechanisms of different types of registers. Our men also must know the value of the different features. They must be able to talk the users' system in terms of his register—in other words, they must be able to satisfy him on his purchase and not discourage him in an effort to sell him something else.

As a general rule, manufacturers are pretty careful in the selection of material for their product. Careful research is made to see that the parts correlate and harmonize with each other, yet in my limited experience as an automobile user, I have often found servicemen suggesting a different type of carbureter, magneto, or some other accessory they may have on hand. When he does this it raises a question in the mind of the user as to the quality of the product.

Reselling is just as important as selling, so why not enthuse your service department over it. Why not teach them the merits of the different parts? Why not spend a few hours each month in acquainting them with the best methods of meeting customers' objections and explaining the product. Why not school them in telling the users what causes the particular trouble and showing them how to avoid it in the future?

Run your service garages to take care of your users and not as a source of additional revenue. Have it understood in your organization that your profit is made in the sale, and that your service is for the user's benefit. Then service will be easier to sell. Have your servicemen sell them on the quality of your cars so that the man who leaves your front door as a prospect is not killed by what he is told at the garage door. It is far better to endeavor to have a serviceman sell his company and its product in accordance with the company's idea rather than his own.

Selling Service

I am mentioning just a few things a serviceman has to sell:

1. The company and its product.
2. The reasonableness of the guarantee.
3. The necessity for the repair job according to the company's standard.
4. The use of his company's parts.
5. His price.
6. The need for having his automobile taken care of periodically.
7. The proper use and the avoidance of abuse.
8. The manufacturer's service.
9. Most important, the fact that the service station is being run for the benefit of and in appreciation of users and not as a means of deriving another income from them.

Teach him how to sell these intelligently. It pays in satisfied users and satisfied users sell cars.

I cannot help but feel that we too often overlook the opportunity of meeting with those who are associated with us. Too often we get the idea that it does not pay. Perhaps we cannot measure the actual results, but sometime in your visits around the country compare the number of cars of different makes in the same price class in different cities and you will get the answer whether service honestly and efficiently given and intelligently sold does not pay.

Some one has said "Service is the big brother of sales." None of us will deny the truth of this statement. But in all this education of the users and the servicemen let us not forget—that only good service can be satisfactorily sold.

ASPIRAL valve coupling has been adopted as standard on all Alemite compressors. It is fitted with a spring-actuated leather washer which is drawn against the Alemite fitting by a bayonet joint, which makes the connection proof against leakage. This coupling is fitted either to a flexible hose or rigidly to the compressor itself.

When so specified, the spiral valve coupling is fitted with a check valve, which enables the operator to create a pressure of 500 lb. per sq. in. in the compressor before applying it to the Alemite fitting. Then, when it is applied to the fitting, the check valve opens automatically and the pressure forces the lubricant into the bearing.

Alemite compressor

Important Merger in Publishing

A MERGER of two large publication interests has just been announced by the United Publishers Corporation of New York, which Corporation has contracted to take over all the capital stock of The Chilton Company of Philadelphia and combine this Corporation with The Class Journal Company, which it already owns.

The new printing plant of The Chilton Company at Fifty-sixth and Chestnut Streets, Philadelphia, and the publications of The Chilton Company, namely, Automobile Trade Journal, Commercial Car Journal, Chilton Automobile Directory, Chilton Tractor and Implement Journal and Chilton Tractor and Implement Index, will be continued as before under The Chilton Company, and the publications of The Class Journal Company, namely, Automotive Industries, Motor World, Motor Age, Motor Transport, Distribution & Warehousing, Tire Rate Book, El Automovil Americano and Automobile Trade Directory, will be continued as before by The Class Journal Company.

There will be but a slight change in the personnel of the two companies. Messrs. Artman and Busby, President and Vice-President respectively of The Chilton Company, will retire from active business. Mr. A. B. Swetland will become Vice-President of The Chilton Company, and remain as manager of The Class Journal Company. Mr. H. M. Swetland, founder of The Class Journal Company, will remain as President of that Corporation. Mr. C. A. Musselman, formerly Treasurer and General Manager of The Chilton Company, will become President of The Chilton Company, Vice-President of The Class Journal Company, and General Manager of both corporations.

The properties will be operated along the same lines as prior to the consolidation, but will give an opportunity for increased efficiency and a wider range of activities.

The paramount consideration which prompted the merger was the economic advantage to both publishers and the industries they serve. It is probably the largest and most important merger that has taken place in the publishing industry in years, and will undoubtedly result in wielding a healthy influence upon the automotive industry.

Modern Piston Ring Practice Involves Efficient Design and Production

Part II

Gray iron is material most commonly used, but other metals are employed in certain instances. Individual or pot casting are usual methods of manufacture. Proper construction of grooves for oil is important. Various testing devices are available.

By P. M. Heldt

PRACTICALLY all piston rings in use at the present time are made of gray cast iron, and one little realizes what fine qualities this rather common material possesses until one reads the literature of the piston ring makers. What makes cast iron particularly suitable for this purpose is that it combines a fair degree of elasticity with a rather soft texture. It will therefore give the required spring pressure without unduly wearing the cylinder wall. Whatever wear takes place on the contact surface should preferably be on the rings, because the rings are much easier to replace than the cylinder. Other materials besides cast iron are being used to a slight extent, however. Thus, one concern has been making piston rings of monel metal, a natural alloy of copper and nickel; another makes one member of a two-piece ring of bronze; and several use steel springs under cast iron or bronze rings.

Some years ago attempts were made to produce piston ring castings in metal molds subjected to centrifugal action. It was claimed that the pressure exerted by centrifugal force on the iron, while flowing into the mold while cooling, would produce a denser grain and hence a harder and more springy ring. The writer understands that the experiments along this line carried out in this country did not lead to any tangible results, as the chilling effect of the metal mold made the iron so hard that it could not be worked, but that the British Piston Ring Co., Ltd., of Coventry is manufacturing piston rings from pots that have been centrifugally cast.

One advantage claimed for centrifugally cast rings is that impurities in the mold, being generally much lighter than the iron, are forced toward the center of the mold and are later removed by turning, thus leaving a ring casting without defects due to impurities.

Originally piston rings were made from pot castings, and this method is still being followed by some makers, but the majority now make them from individually cast blanks.

Where the individually cast blank is used the inside of the ring is left in the rough, or if it is worked upon practically only the burs at the edges and any slight unevennesses of the surfaces are taken off by snagging. The surface metal of the ring is chilled in casting and therefore is of a closer grain, somewhat harder and more springy than the metal below the surface, and for this reason a ring with an inner unfinished surface, with the scale in place, is believed to be a better ring.

Those who still make their rings from pot castings sometimes claim greater uniformity of material in the ring, and this claim is evidently well founded, but the question then arises whether it is better to have the ring consist entirely of a metal of a certain quality or to have two kinds of metal in the ring, one the same as that in the ring of uniform material and the other a material of a higher quality. The advantage of the pot casting process would seem to be lower cost of manufacture, but the process of making rings from individual castings has been so developed that it is little if any more expensive to produce rings by it.

"Individually cast" does not imply that each ring is cast separately. A number of patterns for such rings are gated, as shown in one of the illustrations herewith. The number of rings cast in the same plane depends on the size of the rings and the number that can be arranged on a flat pattern plate of the size of flask used. These flasks are then stacked one above the other, so that really a large number of rings are poured in one casting. The pattern is formed with an extension at the outer side of each ring and this part of the mold fills up with molten metal before the ring portion itself, hence any loose sand, etc., in the mold is carried into this extension and the ring is composed wholly of sound metal. Not so much importance seems to be attached at present to obturating the gap as was the case six or seven years ago. Of course, everyone will admit that if no gas can leak through the gap it is an advantage, but the general belief seems to be that with a well fitted ring with either lap or diagonal joint the leakage at the gap is insignificant.

The amount of the leakage is, of course, substantially proportional to the width of the gap, and piston ring

IN his previous article on modern piston ring practice, published in AUTOMOTIVE INDUSTRIES of December 6, P. M. Heldt discussed methods of putting rings under tension, by peening or hammering, expanding and heat treating, and other phases of similar character.

In this article he completes his discussion of this subject with a treatment of ring materials, individual vs. pot castings, oil wiper rings and testing methods.

makers try to provide such a gap as will be practically closed up when the engine is working at full load continuously; that is, at the maximum normal working temperature. A novel arrangement of the gap, which prevents injury to the ring from butting, has been adopted by several manufacturers recently. This consists in cutting a section out of the ring whose faces make an angle of, say, 45 deg. with a radial line. Then, if the ring expands so much in service that the ends begin to butt, one end is forced under the other down into the groove. The length of gap is usually made either 0.0025 or 0.003 in. per inch of bore.

There seems to be an impression among engineers that the lap joint is slightly superior to the diagonal joint, but inasmuch as the joint is practically closed up when the engine is working at normal temperature, it is hard to see why there should be any material difference between the two. With rings which are turned to the diameter of the bore and then put under tension by peening or some similar method, it is practically necessary to use the diagonal joint, as the lap joint requires the removal of a considerable section of the ring, which is not permissible if the rings are turned to the diameter of the bore in the first place.

In many engines the supply of lubricant to the cylinders is excessive and a great deal of oil gets by the pistons and is burned in the combustion chamber, causing a smoky exhaust and carbon deposits. For the proper distribution of oil over large bearing surfaces oil grooves have always been considered of great importance. Most of the oil is thrown onto the cylinder wall when the piston is near the top end of the stroke, and if the bottom ring is provided with a sharp edge at the bottom and a groove is cut directly below the bottom ring groove, the ring will scrape the oil off the cylinder bore into this groove, from which it can generally return to the crankcase through small holes drilled through the wall of the piston at the oil groove.

Oil Groove in Ring

Instead of having an oil groove in the piston, it can be cut in the ring itself. Some cut a substantially square slot in the ring at its lower outer edge and in some cases radial slots are provided on the lower side of the ring through which the oil thus scraped off may pass to the bottom of the ring groove and hence back to the crankcase.

Others cut the oil groove in the middle portion of the ring, away from the edge, and in some cases the top edge of the ring is beveled off so it will not tend to scrape the oil off the cylinder bore during the upward stroke of the piston. As a rule, manufacturers of oil wiper rings recommend the use of only one such ring per piston, in the lowest groove above the piston ring.

All of the development in piston rings outlined in the above has taken place without the existence of a generally approved method for testing rings. The object of piston rings being to seal the joint between the piston and cylinder, the most conclusive test would seem to be one in which the ring is actually in place on the piston and in the cylinder, and the amount of air or gas which leaks by the piston in a given time when there exists a certain difference of pressure above and below the piston, respectively, is measured. This method is used by the Cadillac Motor Car Co.

An engine with sealed crankcase is placed on a dynamometer stand, the crankcase being connected by piping with a barrel which is filled with water at the beginning of the test. A pressure gage of the U-tube type is also connected to the barrel. As gas leaks by the pistons the pressure in the crankcase and barrel rises, and an operator

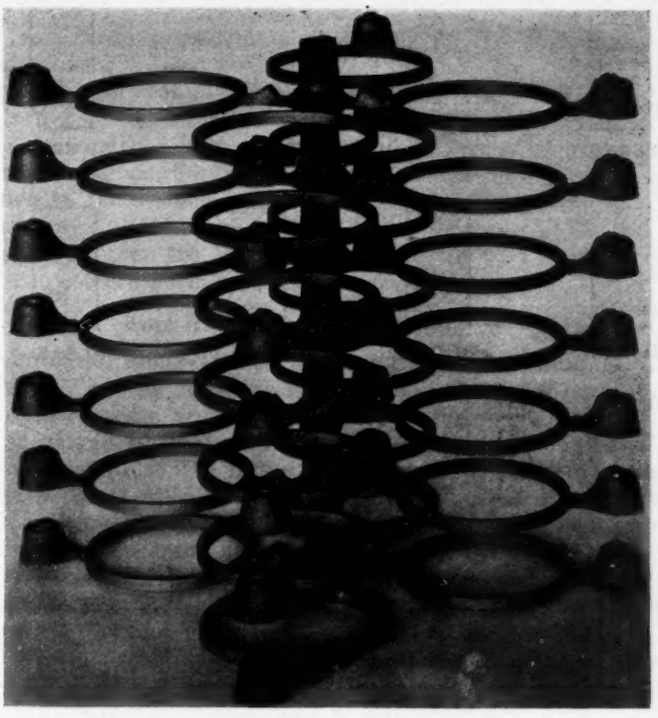


Fig. 1—A gate of individually cast ring blanks (Gill Mfg. Co.)

allows water to flow from the tank through a control valve at such a rate as to maintain a constant pressure within the barrel. From the amount of water which is thus allowed to drain off, the rate of leakage past the pistons can be calculated.

A still more direct method of testing the effectiveness of the rings would be to make horsepower tests with different forms or makes of rings and compare the results. However, as long as the rings are new and well fitted, no great difference in the maximum power output of the engine would be expected, and since it would be necessary to largely dismantle the engine between tests, whatever differences in output were noted might be due to quite an extent to other changes.

At any rate, a dynamometer test of an engine as ordinarily made is not a particularly accurate measurement, and when the magnitude sought is not the output of the engine, but the difference in the output in successive tests, it is easily seen that any small inaccuracy in the tests themselves may cause a relatively large inaccuracy in the result looked for.

A test which has been much used in the past in the piston ring industry is the light test. The ring is inserted into a ring gage of a bore equal to that of the cylinder for which it is intended, and an electric lamp is then placed behind the gage. If no light shines through between the ring and the gage at any point of its circumference, the ring is considered to be perfect.

Merit of Test Discussed

This test has some merit, and a ring which passes it is at least a better ring than one which does not. However, it is not conclusive, for a ring may make contact with the gage at a particular point and yet not exert any pressure on it. Thus a ring which passes this test and which exerts an average pressure against the cylinder wall of one pound per inch in length of the ring, may exert a pressure of ½ pound over a certain one-quarter-inch section of length and no pressure at all over another similar section.

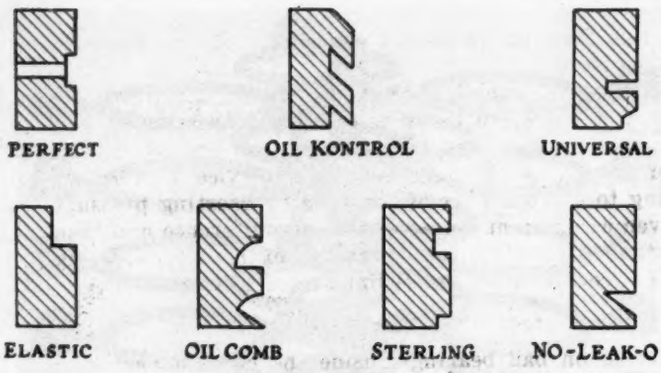


Fig. 2—Oil rings

The light test serves to separate very faulty rings from those which are tolerably good, but it is not sufficiently sensitive to distinguish the moderately good from very good rings.

To perform its function, the piston ring must exert a pressure against the cylinder wall, and this pressure should preferably be uniformly distributed over the whole of the contact surface of the ring. Unfortunately, there seems to exist no method for measuring the specific pressure exerted by the ring at any particular point of its contact area, and in default of such a method makers and users have resorted to methods intended to give the total pressure exerted by the ring.

Some apply pressure to the outside of the ring at points 90 deg. from the gap, and measure the pressure required to close up the ring or to compress it to the diameter of the cylinder bore. However, in view of the fact that in this case only one-half of the ring is subjected to bending moments, and the further fact that in practically all modern rings the form of this half and of that not subjected to bending in the test are quite different, it is obvious that the test does not yield any definite or comparable results. The same applies to a similar test in which pressure is applied to one end and the middle point of the ring until the ring is compressed to the diameter of the cylinder bore.

Determining Ring Pressure

The simplest and best way of determining the total and the average pressure of a piston ring consists in measuring, by means of a spring balance, the pressure that must be applied to a fine wire or cord wrapped around the ring, to close up the ring. The cord or wire should be well oiled to reduce the friction. As the pressure is exerted on a line not tangential to the surface of the ring, but tangential to a circle larger in diameter by the diameter of the cord or wire, if the most accurate results are desired, a correction should be made.

The pressure necessary at the circumference of the ring to close up the ring is evidently greater than the measured pressure, in the proportion of the ring diameter plus the wire diameter, to the ring diameter. But inasmuch as there is some friction of the wire against the ring and the stiffness of the wire has to be overcome, this probably makes up for the difference in diameters and the correction may be neglected.

Method Described

The work done in compressing the ring by means of the cord is evidently $\frac{1}{2}$ Wl, where W is the weight necessary to close up the ring and l is the length of the gap. Now let us assume that the ring is closed up by applying a radial pressure of p lb. per sq. in. to its outer surface. The total pressure then will be πbwp lb. If the circumference of the ring is reduced by l, the diameter is reduced by l/π and the radius by $l/2\pi$. Hence each element of the ring may be assumed to move radially inward a distance of $l/2\pi$, and since the resistance to compression increases from zero to πbwp lb., the work done on the ring is

$$\tfrac{1}{2} \times \pi bpw \times \frac{l}{2\pi} = \frac{bpwl}{4}$$

The work done in closing up the ring is the same whether the force is applied tangentially at the ends or radially over the whole circumference, hence

$$\frac{\mathrm{W}l}{2} = \frac{bpwl}{4}$$

and

$$p = \frac{2\mathrm{W}}{bw}$$

where p is the radial pressure of the ring in lb. per sq. in., W the tangential force necessary to close up the ring, b the cylinder bore and w the ring width, both in inches.

An instrument for making a variety of tests on piston rings has been developed by H. S. Frank of the Frank Motor Products Corp., and is illustrated by the drawings herewith. First the ring to be tested is put into a ring gage of the diameter of the cylinder bore for which the ring is intended, and then clamped by means of a C clamp at the gap. This method is directly applicable only to rings with a lap joint, but rings with diagonal joint can be similarly clamped by placing short sections of another

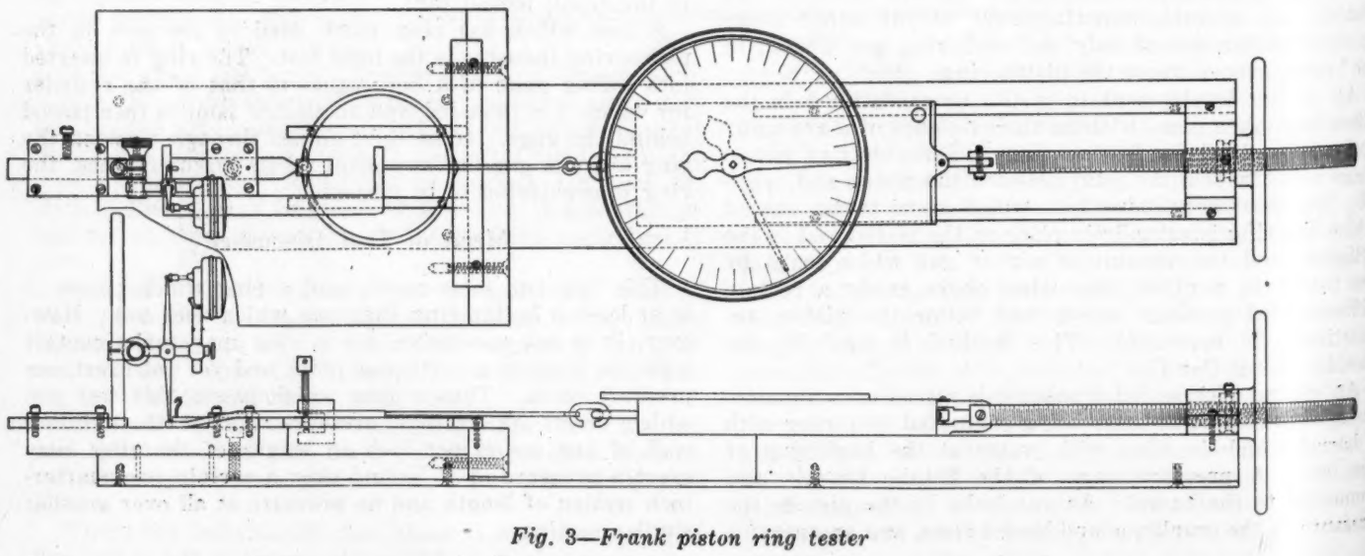


Fig. 3—Frank piston ring tester

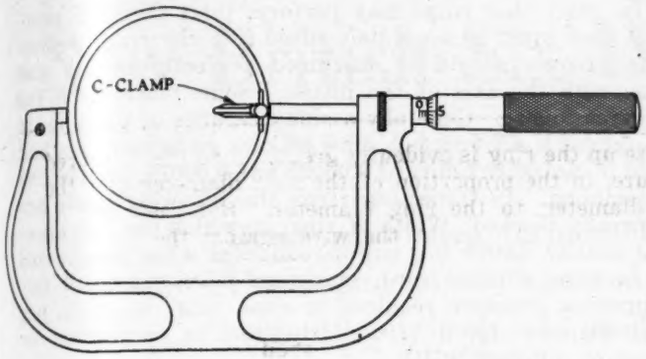


Fig. 4—Micrometering a piston ring after being compressed and clamped at the gap

ring on both sides at the gap and clamping over these sections. The ring thus clamped is removed from the gage and is then measured by means of a micrometer for the diameter over the gap and at 90 deg. thereto.

When the ring is removed from the gage it is, of course, free to assume its natural shape, except for the slight restraint exerted by the clamping pressure. If it exerted the same pressure at all parts of its circumference against the gage, then it will be of true circular shape when removed from the gage, because the tendency to expand will be the same all around the ring, and the micrometer measurement therefore will prove it out. The effect of the slight restraint by the clamp is to keep the ring in the circular form, and whatever error there is in the test due to this factor is in favor of the ring.

Most rings are found to be out on this test, showing a greater diameter across the gap than at right angles thereto when in the free state, and the amount of pressure which must be applied over the large diameter to reduce that diameter to the nominal value or to the diameter of the cylinder bore, can then be determined by means of the testing device. To this end a cylindrical gage of the same diameter as the cylinder bore is placed on the table of the instrument, between a cross bar with a central notch in it and a sliding bar through which a dial gage is operated.

Dial Gage Set

By means of this gage the dial gage is set to record zero when its operating lever is pressed firmly against the back of the sliding bar and the forward, pointed end of the bar rests against the cylindrical gage. This gage is then removed and the ring to be tested, whose ends are held together by the C clamp, is put in its place. Pressure produced by means of a hand wheel and a screw is then applied, through the intermediary of a spring scale and a draft device consisting of a rod and yoke, to the rear end of the sliding bar, until the dial gage again registers zero, and the pressure indicated by the spring scale is then read off. The pressure thus indicated constitutes an index of the non-uniformity of pressure distribution over the circumference of the ring.

Another test which can be made by means of this device is for the tangential pressure required to close up the ring. A cord or thin wire is secured to the standard on which the dial gage is mounted, is wrapped once around the ring, and is then secured to the hook or link of the spring scale, care being taken that the gap in the ring is in line with the two points of attachment of the cord. Tension is then applied to the cord by turning the handwheel, until the gap in the ring is practically closed, and from the tension indicated by the scale the total pressure exerted by the ring radially against the cylinder wall, as well as the average pressure per square inch of contact area, can then be calculated by means of the formulæ already given.

A device for rapidly comparing piston rings with a standard ring, or, in other words, for inspection service in the factory, has been developed by the firm of Adolph Saurer of Arbon, Switzerland. The device compresses the ring to the diameter of the bore by exerting pressure at eleven equidistant points of the circumference and then indicates whether the total pressure exerted by the ring is within certain permissible limits.

Steel Ring Has Radial Slots

Mounted on ball bearings inside the circular casing is a steel ring having radial slots in its upper face. A number of bell cranks are pivoted to the casing and a roller on the outer end of each bell crank fits into one of the slots in the ring. The other end of each bell crank also carries a roller, which is caused to bear upon the circumference of the piston ring to be tested by the rotation of the steel ring already mentioned. The latter ring carries a projecting finger which engages with a plunger located in a sliding tube.

By pressing on a lever which projects from the casing, this tube is caused to move toward the gage shown in the drawing, against the pressure of a helical spring. The plunger is pressed up against a shoulder in the same direction by a helical spring within the tube, and is therefore carried along with the tube until the resistance to its motion is sufficient to overcome the pressure of the spring acting upon it. This happens when the finger, which is carried along by the plunger, has rotated the steel ring sufficiently to cause the rollers to exert a certain pressure on the piston ring.

The gage of the instrument has two concentric dials, the reading of one being due to the motion of the tube and that of the other to the motion of the plunger. To set the instrument, a steel disk of the closed size of the ring to be tested is inserted and the lever pressed until the rollers are in contact with it. The dial is then rotated until the

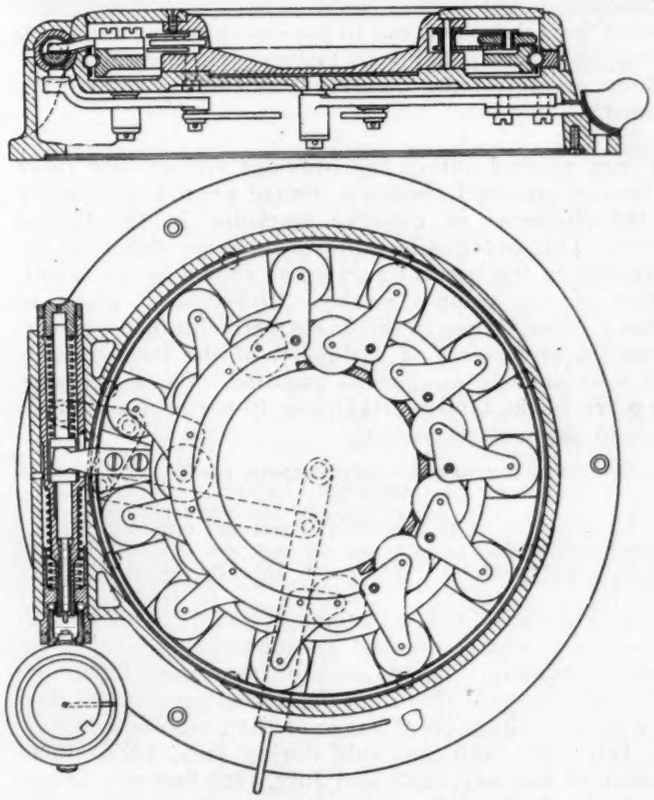


Fig. 5—Saurer piston ring testing device

pointer stands opposite the zero mark. A piston ring of standard strength is then substituted for the disk and the lever is again pressed. When the ring has been compressed to the standard diameter, the pointer will again point to zero, but before this occurs the inner dial will have been actuated by the differential motion of the plunger and will take up a position depending upon the relation between the reaction of the piston ring and the initial compression of the spring which holds the plunger up to its work. This compression is adjustable, and when the machine is properly set the effect of closing it on a ring of standard size and strength is to bring the pointer to zero on the size scale and between two limit marks on the strength scale.

In order that rings may perform their function properly they must be accurately fitted into the ring grooves. The grooves should be machined perfectly smooth and true with the axis of the piston. Some makers roll the grooves to size. Generally a side clearance of 0.001 in. in the grove is allowed, but some makers go beyond this and hold to clearance limits of 0.00025 and 0.00075, by selective assembling. In inspecting rings the following items are generally checked: Width of ring, on which the tolerances are usually 0.0005 in.; out-of-roundness when compressed by a light wire or cord, maximum tolerance 0.010 in.; tangential pressure required to close ring, ¾—1 lb. per inch diameter for a 3/16-in. ring and in proportion for rings of different width.

Gasoline Survey Shows Trend Away from Uniformity

Difference in end points of maximum and minimum samples greater than in 1922. Seasonal variations are about as they have been.

A REPORT issued by the Bureau of Mines, Department of the Interior, covering its semi-annual fuel survey brings to light the following:

The practically uniform tendency toward greater uniformity in the character of gasoline which continued from April, 1917, to January, 1923, has been interrupted as shown by Table 1.

Seasonal variations from summer to winter, though still present, have apparently reached a state of minimum fluctuation.

A seemingly slight decrease in volatility in the gasoline sold last summer is indicated.

Of 158 samples collected, 109 samples failed to meet Federal specifications, but the deviation in the majority of samples is not great. The average distillation curve plotted from data obtained in the latest survey falls well below that corresponding to Federal specifications.

Some extracts from the report of the survey are appended.

IT was pointed out in the previous survey that there was an apparent tendency toward greater uniformity in the character of gasoline marketed in the United States. This practically uniform tendency has been interrupted in the present survey, as shown by an examination of the column marked "Difference," given in Table 1. The figures in this table were obtained by averaging the end points of a number of the least volatile and most volatile samples of gasoline. These averages are given in the table as Maximum 10 per cent and Minimum 10 per cent respectively.

TABLE 1—SHOWS DECREASING RANGE OF END POINTS IN EACH GASOLINE SURVEY

	April 1917	April 1919	Jan. 1920	July 1920	Jan. 1921	July 1921	Jan. 1922	July 1922	Jan. 1923	July 1923
Maximum 10 per cent	449	472	482	502	467	473	461	461	451	471
Minimum 10 per cent	334	363	377	406	382	398	397	401	397	400
Difference	115	109	105	96	85	75	64	60	54	71

Seasonal variation from summer to winter, though still present, has nearly reached an apparent state of minimum fluctuation. Comparison of the July, 1922, and July, 1923, Surveys shows, on the whole, very little difference in the boiling point range of the gasoline sold during July, 1922, and that sold during July, 1923. Comparison of January, 1923, and July, 1923 Surveys, brings out distinctly the difference between summer and winter gasolines. The differences indicate a seemingly slight decrease in volatility in the gasoline sold during the present summer.

In comparing the present survey with that of January, 1923, the average for New York shows a decided increase in the first drop of 20 per cent points; the average for Washington shows an increase at both ends of the distillation curve; the average for Pittsburgh has increased throughout the entire range, especially in the initial boiling point, with the exception of a noticeable decrease in the 90 per cent point. The average for St. Louis, Denver, Salt Lake City, Chicago and San Francisco, in the order named, show rather large increases throughout the distillation range, especially in the initial boiling point, 90 per cent, and end points.

Of 109 samples which failed to meet the Federal specifications revised Oct. 31, 1922; 35 samples failed at the initial point; 11 at the 20 per cent point, 27 at the 50 per cent point, 41 at the 90 per cent point, 74 at the end point and 4 in the amount recovered from the distillation.

The essential features of Federal specifications for motor gasoline are as follows: First drop 131 deg. Fahr.; 20 per cent point, 221 deg. Fahr.; 50 per cent point, 284 deg. Fahr.; 90 per cent point, 392 deg. Fahr.; end point, 437 deg. Fahr., and at least 95 per cent shall be recovered as distillate from the distillation.

TABLE 2—AVERAGE RESULTS OF MOTOR GASOLINE SURVEY, JULY, 1923

District	Specific gravity	First drop A.P.I. degrees	20% Degrees	50% Degrees	90% Degrees	End point Fahrenheit	Ave. B.P. Fahrenheit	Per cent rec'vrd
New York City..	0.752	56.6	125	211	270	369	422	272	96.7
Washington, D. C.	0.755	55.9	130	202	257	374	434	266	97.1
Pittsburgh, Pa..	0.747	57.9	120	189	253	375	435	261	96.3
Chicago, Ill.....	0.754	56.2	123	206	272	390	444*	277	96.8
New Orleans, La.	0.745	58.4	130	215	275	374	431	277	97.3
St. Louis, Mo...	0.746	58.1	122	207	275	392	447*	279	96.7
Bartlesville, Okla.	0.745	58.4	122	201	270	392	443*	274	96.5
Denver, Colo....	0.755	55.9	130	212	278	390	441*	281	97.3
Salt Lake City, Utah	0.750	57.2	117	206	271	382	431	273	96.0
San Francisco, Cal.	0.760	54.7	127	210	266	377	434	273	97.0
Average	0.751	56.9	125	206	269	382	436	273	96.8

*Failed to meet specifications for Federal purchases adopted Feb. 3, 1922 and revised Oct. 31, 1922.

Detailed results of the distillation tests can be obtained in Serial No. 2525, on request from Bureau of Mines, Washington.

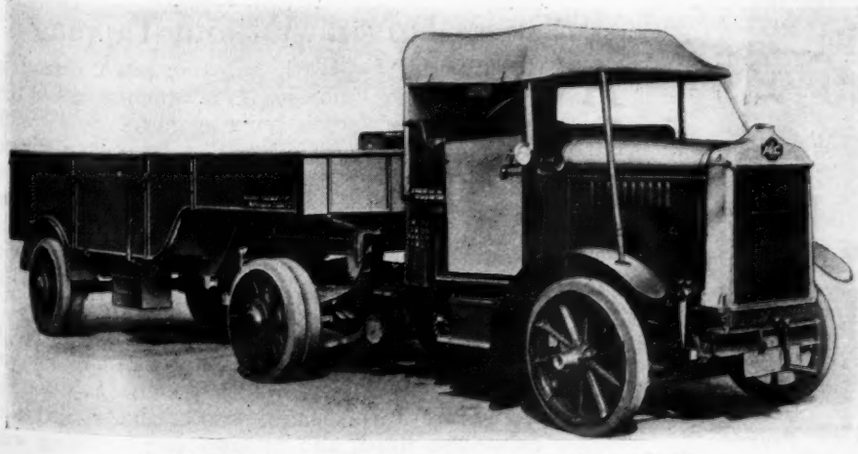
New British Six-Wheeler Has Separate Suspension for Rear End

Brake equipment includes hand, foot and air-actuated shoes. Has engine of 65 h.p. and is designed to average 12 m.p.h. with 10-ton load. Is product of Associated Equipment Co. Turntable mounted directly on driving axle. Body length 21 ft.

FOR six months a new flexible six-wheeler or semi-trailer has been under test on British roads by its makers, the Associated Equipment Co., the concern which builds 95 per cent of London's buses and has a large output of three and four-ton trucks. It is the largest vehicle of its type yet made by a British concern, being designed for loads up to 10 long tons and having an engine that develops 65 b.hp. at 1000 r.p.m.

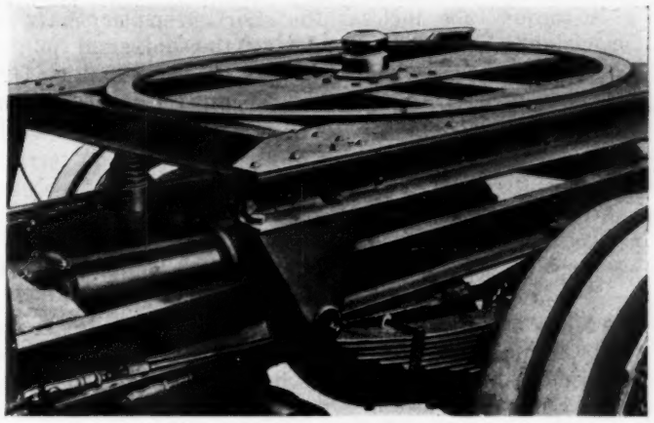
The turntable is mounted directly upon the driving axle through the medium of half-elliptic springs, which are located close up against the wheels, giving a wide base of support for the trailer. From the turntable frame the rear end of the tractor frame hangs suspended by four double volute springs, which therefore carry no part of the trailer or its load but serve merely to provide a uniformly effective rear spring suspension for the tractor, whether the trailer be loaded or empty. This form of mounting also provides the needed flexibility between tractor and trailer.

There is nothing unorthodox in the method of connecting the power and trailing units, except the large diameter of the turntable (52 in.) and the locking device, the latter consisting of a substantial U-shaped pin that slides into both sides of a groove in the king pin. The side members of the turntable frame are curved inward at their rear ends and the front end of the trailer frame carries two vertical guide plates, this arrangement having effect in correcting any slight error in steering that may occur when the tractor is being backed under the trailer for coupling up. The trailer carries a pair of adjustable jacks of which the heads are hinged to the frame, so enabling the jacks to be swung up and held in place ready for use when the tractor is withdrawn.



1—*New 65-hp. A. E. C. six-wheeler for 10-ton loads*

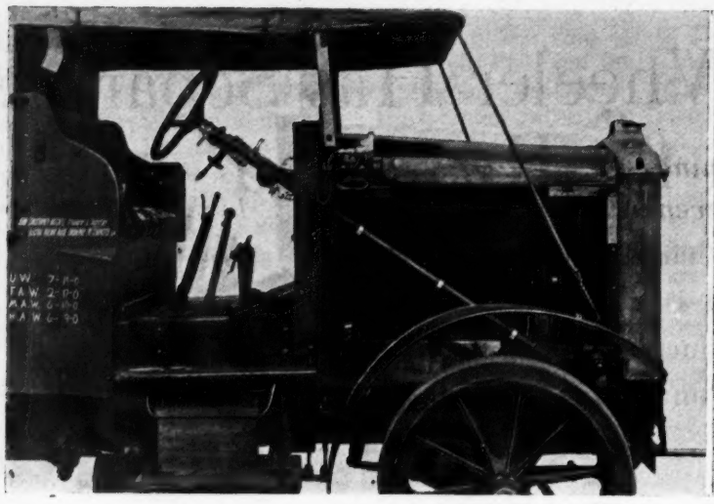
The braking equipment consists of hand and foot operated shoes applying within drums attached to the driving wheels of the tractor; in addition, a standard Westinghouse pneumatic braking system also operates the hand-actuated shoes as well as others within drums attached to the trailer wheels. This air brake system is applied



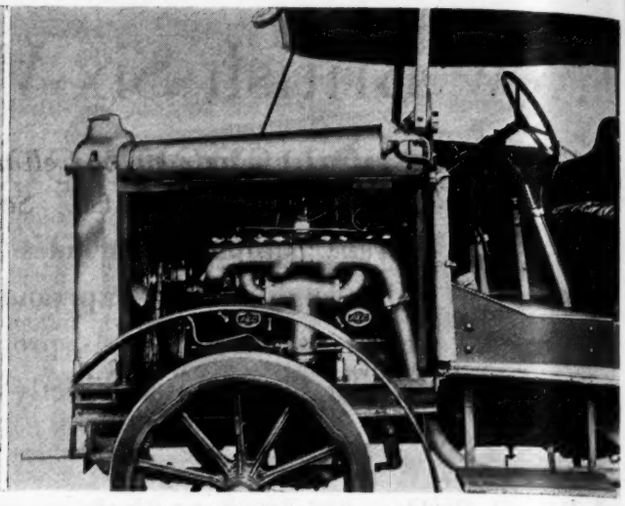
4—*Turntable frame from which rear end of tractor frame is suspended by six double volute springs, one of which is visible*

or released by a small lever attached to the steering column. In the event of the trailer becoming accidently detached or partially detached from the tractor the air brakes immediately operate on the wheels of both portions; similarly when the two portions are intentionally separated the air brakes are operative on the trailer wheels. For further security, a screw hold-on gear is provided for the trailer brakes for use when the trailer is detached.

The four-cylinder engine has a bore and stroke of 5¼ x 6¾ in. This is a rather large power plant and it is claimed that the six-wheeler will carry 10 tons up a 20 per cent gradient. The cylinders have L-heads and are cast in pairs; the crankcase is of cast iron and with the separate four-speed gearset is mounted on a sub-frame. Ignition is by the Delco system, a feature unique in British truck practice at present, the generator being belt driven. An inclosed and sealed governor is fitted, acting on the engine throttle and driven from the distribution gearing.



2. Right-hand side of engine



3. Left-hand side of engine

A fabric-faced cone clutch is used, with a coupling shaft to the gearset having Spicer joints at each end. Fourth speed is direct, the indirect ratios being: third, 1.685; second, 2.875, and first, 5.12. Gear-shift and hand-brake levers are centrally mounted.

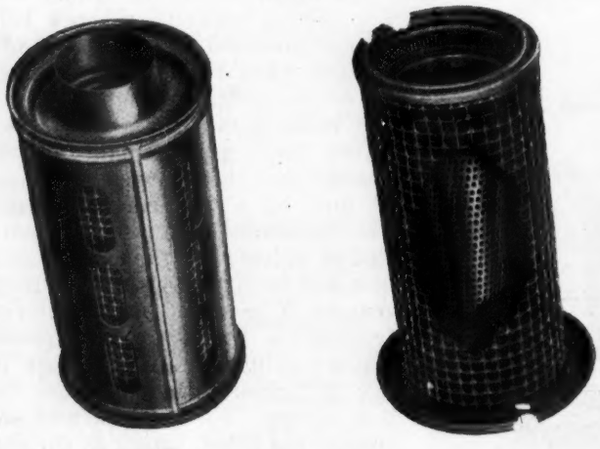
A torque tube incloses the short propeller shaft, but provision is made for rendering the universal joint at the front end accessible within its spherical casing. Overhead worm gearing with a ratio of 9.33 forms the final drive, the gearing as a unit with the differential being carried by the detachable top cover of the axle casing. The latter consists of a steel casting reinforced by steel tubes on the extensions of which the road wheels run on roller bearings.

Unladen the vehicle with an all-steel open body as illustrated weighs 17,800 lb., the tire size being 920 by 140 mm. twins on the driving and rear wheels. The body length is 21 ft. and the width 7 ft.; the overall length of the tractor and trailer is 30 ft. and the turning circle 46 ft.

Simplex Air Cleaner Is of Oil Filter Type

AN air cleaner of the oil filter type, of cylindrical form and specially designed for use on trucks and passenger cars, has been developed by the Donaldson Co. and will be marketed as the Simplex. An outside view of the complete cleaner and a cut-away view of the filtering member are shown in the accompanying illustrations. The outlet of the cleaner is connected to the air inlet of the carbureter, either direct or through the intermediary of a short length of pipe. Air enters the cleaner through a series of oblong slots in the housing. It then passes both ways around the filtering member and then through it. The filtering member is tubular in shape and is packed with moss. This moss filter is soaked in oil, the surplus oil is drained off and the member is then placed in the shell. In operation, air enters the shell, circulates around the filter and then passes through it on to the carbureter.

The manufacturers state that, so far as they have been able to determine, the cleaner removes 100 per cent of the dust from the air and does not reduce the engine power more than ½ per cent. It is 4 in. in diameter by 8 in. in height (about the size of the Stewart vacuum tank), and may be installed under the bonnet in any position. In service, the filtering member must be removed about every 1000 miles of driving and cleaned by rinsing in kerosene or gasoline, to wash off the dust that has collected on it. It is then dipped in new or used crankcase oil, shaken to remove the surplus oil, and replaced.



(Left) Simplex oil filter type of air cleaner (Right) Filtering member of Simplex air cleaner

Screws Driven Without Tapping

A HARDENED screw with a coarse pitch thread designed to be driven home with a hammer rather than set with a screw driver is being manufactured by the Parker-Kalon Corp. These screws cut their own threads as they are driven, and are said to provide a permanent positive fastening. No tapping is required. It is necessary only to drill or punch a hole of the correct size and depth, insert the tip of the screw and drive it home with a few blows of the hammer. When once inserted the screw cannot be removed by any ordinary means.

It is intended for use in fastening parts which are to be held together permanently, such as attaching name plates. It can be used practically in all metals, fiber, etc. These screws are furnished in brass, copper, nickel or electro-galvanized finish and in sizes corresponding with every machine screw up to No. 14.

New Line of Shapers Meets Variety of Needs

Overhanging gear box eliminated in new models brought out by Cincinnati Shaper Co. Seven sizes included. Operating levers conveniently located. Automatic, visible type lubrication used.

A NEW line of shapers, known as the Cincinnati Climax, has been brought out by the Cincinnati Shaper Co. It comprises seven sizes, designed to meet all shaper requirements, from those of toolroom work up. The outstanding features of these new tools are as follows:

All speed and driving gears are placed within the column, there being no overhanging change gear box on the side of the machine; the lubricating system is of the automatic, visible type, supplying oil to the bearing surfaces of the entire machine; levers for starting, for speed control, for feed engagement and variation, for ram adjustment and for stroke adjustment, are all easily reached by the operator without leaving his working position; direct reading indicators for speed, feed and length of stroke are provided; the main crank gear is of the helical type, semi-steel, made in one piece; all other gears are made from chrome nickel steel and heat treated. The machine is completely guarded both for the operator's protection against danger from moving parts and belts, and for the protection of sliding surfaces against chips.

The drive is of the single-pulley type, with friction clutch and brake, the pulley shaft being mounted on roller bearings, thereby providing a bearing that will carry any overload occasioned by an unnecessarily tight belt. The machine may be driven by a motor mounted directly on pads provided on the back of the tool, the construction permitting the motor to be attached at any time without difficulty, in the customer's shop. The speed of the pulley is such that the proper range of cutting speeds can be obtained by a motor making 1800 r.p.m.

The speed gears, placed within the column, run in oil and slide on splined shafts, supported at both ends, making a compact and rigid arrangement. The gear chamber (A in the sectional view) forms the reservoir for the lubricating oil. Eight selective changes of speed are provided, from 11 to 138 cutting strokes per minute on the 16-in. shapers. These changes are obtained by two levers brought within easy reach of the operating position.

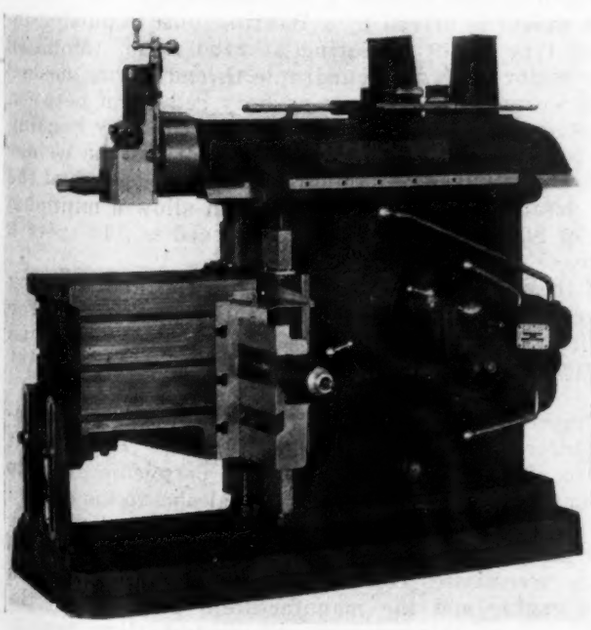
A feature of the feeding motion is that it is actuated by cams and not by an eccentric and ratchet. Another feature of the general feed arrangement is the omission of the usual feed box on the end of the cross rail, and the transfer of this mechanism to the side of the column. This removes it from a position that encroaches upon the operator's working space.

Feed Arrangement Described

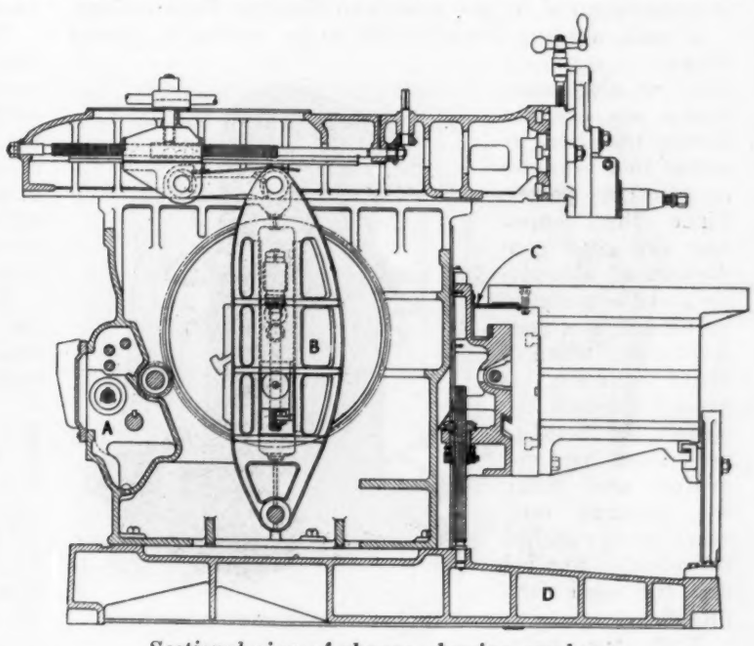
Eleven feeds, ranging from 0.010 to 0.170 in., are provided. The feed variation is conveniently accomplished by means of a lever, mounted on a direct reading dial, indicating the feed in thousandths. The feed engagement lever has three positions, "Stop," "Right hand" and "Left hand," indicating the direction of the table movement. A friction safety device protects the mechanism from injury resulting from allowing the table to feed to the end of the rail.

The ram is "V" type. Adjustment is made by means of a full length taper gib, controlled by a single screw. A guard forming a part of the ram prevents dirt from working its way into the bearings.

The "V" type ram has been adopted as a result of a series of cutting tests with square and "V" type ram shapers. Experience indicates that there is little difference between the two types, with respect to cutting



Cincinnati Climax shaper



Sectional view of shaper, showing gearbox, rocker arm, cross rail guard, etc.

action, but the "V" makes it possible to have both sides of the ram ways in the column cast solid with it and to provide complete adjustment to the ram ways by means of a single screw.

A distinctive feature of the column is the heavily ribbed, dish-formed side which resists deflection resulting from thrust on the crank bearing. The separate crank gear bearing permits of the use of a solid crank gear and renewable bushing.

The crank gear journal is of two diameters, the enlarged portion giving additional strength and bearing surface at the point of greatest strain. The crank gear bearing is close to the rocker arm, and, in addition, the gear portion of the wheel is made to overhang the bearing. The crank pin, which is of drop-forged steel, hardened and ground, is held in the dove-tail slide of the crank gear by a taper gib.

The rocker arm is of a closed type, semi-steel, of the general form shown at B in the drawing. It is fulcrumed at the bottom and connected to the ram by a link. Fulcrum and link pins are hardened and ground. The sliding block is of gray iron and has a hardened and ground steel taper gib on its driving side, to compensate for wear.

Cross Rail Square-Locked to Column

The cross rail is square-locked to the column, which type of clamping is said to be best suited to resist direct thrust of the cut. Side alignment is maintained by a taper gib. Felt wipers remove any dust from the face of the column while adjustment is being made. The vertical screw is stationary and made in one piece. The thrust of the revolving nut is taken by a ball bearing. A heavy steel guard C protects the rail bearing from chips. This guard does not decrease the working surface of the table, nor interfere with the operator.

The apron is provided with T slots for holding work when necessary.

Table Design

The table is of almost complete box section, there being only small openings in the front and bottom. The spacing of the T slots is such that the vise will fit either the top or the sides. Sliding of the table support takes place at the bottom of the table instead of at the shaper base, and parallel action is not dependent upon the exact alignment of the base. For better support of the outer end of the table, the base is made of box section at D, where the stress is greatest. It is closed at the top and serves to catch oil dripping inside of the column.

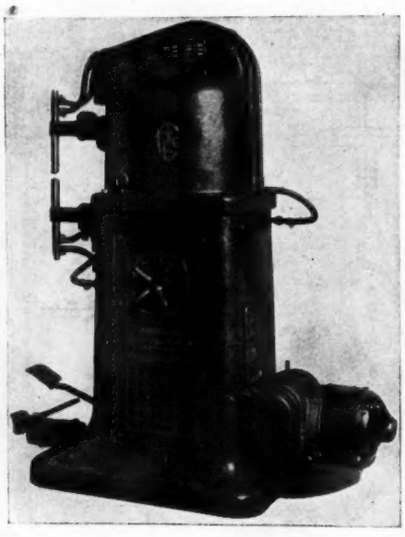
Particular attention has been given to lubrication and the thorough protection of all bearings. The lubricating system consists of a plunger type pump in the gear case, which delivers oil to a sight feed distributing station located on the top of the column, near the belt guards. This pump takes oil through a large bell-mouthed inlet, at a high level, assuring a low velocity in the oil approaching the pump, thus permitting any sediment to settle before being drawn into the pipe circuit. The level of the oil in the gear case is indicated by a glass gage. A surplus of oil is furnished to the distributing station, and this surplus in returning to the pump floods the main gear bearing and feed mechanism. Wicks in the distributing station feed the pipes leading to all parts of the machine.

This line of shapers will be made in seven sizes as follows: 16, 20, 24, 28 and 32 in. Heavy Duty types and 20 and 24 in. Standard types.

Spot Welding Machine Is Automatically Controlled

A SPOT welding machine capable of a wide range of application and with an automatic control that is claimed to make possible a very high speed of operation is manufactured by the American Electric Fusion Corp.

In spot welding the material to be welded is placed between copper dies, or electrodes, which are brought firmly together by either foot pressure or motive power. Since the copper dies are good conductors of electricity and the metal to be welded is a poor conductor, when a heavy current is passed through the circuit, the metal to be welded becomes heated and when the required temperature is reached pressure is applied and the weld completed.



Automatic spot welding machine

With the automatic control with which this welder is provided, the current is turned on and off, and the pressure applied by the controlling mechanism. The current is applied to a certain definite spot only and in just the quantity and for the length of time necessary, it is claimed.

The welder is driven by a Westinghouse repulsion-induction type motor operating at 1100 r.p.m. Mounted on the motor shaft is a quadruple thread worm, meshed with a worm gear, giving a primary reduction between the motor and the lower drive shaft of the gear housing of 10 to 1, and this with equal gears, drives the welder at the rate of 110 spots a minute. Two other gears of the lathe change type are provided, which allow a minimum speed of 80 spots and a maximum speed of 140 spots a minute.

The treadle control is used for starting and stopping the welder, the treadle being located in front of the machine. When the control is fully engaged continuous operation is obtained.

IN France the Association of Gas & Oil Engine Manufacturers is strongly supporting the Government measure compelling all importers of petroleum fuels to buy from the Government each month alcohol to the amount of 10 per cent of their last month's importations, one of the reasons being that the use of the gasoline-alcohol mixture necessitates certain changes in the construction of the engine and the manufacturers believe that the general use of this mixture will protect them against foreign competition.

Paris Taxicabs Use Four-Wheel Brakes Built Under Serex License

Patents include three distinct types. One is a direct acting unit, another an individual servo-mechanism for each wheel, the third a differential servo, for which unusual power is claimed. Tests carried out at Brooklands track show good performance.

By W. F. Bradley

AUTOPLACE, the leading Paris taxicab company which has 3500 cabs in operation, has decided to equip its vehicles with a four-wheel brake system built under Serex license. Three distinct types of brakes are covered by the Charles Serex patents:

1. A direct acting brake.
2. An individual servo brake for each wheel.
3. A differential servo brake which, for a given pressure on the pedal, is claimed to be 2.5 times more powerful than an ordinary brake, and is more efficient when the car is running ahead than when going backward.

The normal type Serex front wheel brake is shown in Fig. 1. The lower portion of the steering pivot, which is fixed in the axle by a cotter pin, carries a nut, into which a ball headed stud is screwed, the upper end of the stud being guided in the pivot.

A lever is mounted on the stud and, by means of suitable connection to the brake pedal, causes it to descend, bringing the ball head into contact with a mobile saddle-shaped member connected to the two brake shoes by short, adjustable connecting-rods with ball and socket heads. The opening in the dust cover for the passage of the main operating lever is covered by a leather gaiter, and the lubrication arrangements provide one grease cup for feeding the steering pivot bearings and the screw and nut.

The Serex servo brake, shown in Fig. 2, differs in having the screw and nut carried in the upper portion of the steering pivot, instead of in the base, with the head of the stud in contact with a rocker arm, which has a ball and socket connection to a hollow link from which there is a fixed and a pivoted lever to an internal band brake. This band is mounted between a couple of brake shoes, and when brought into contact with the revolving drum through the action of the brake pedal, it tends to rotate with the drum.

On one point of the inner face of the band brake, shown at the bottom in the drawing, there is a fork within which is received a lever mounted on the brake camshaft. This lever, being rotated on its axis by the movement of the central servo brake band, applies the two pair of shoes on opposite sides of it. By means of the connection from the servo band to the main brake shoes by a fork and lever, this mechanism is equally effective whether running ahead or backward.

With the differential type brake, shown in Fig. 3, and recommended for heavy vehicles, the brake operating cam,

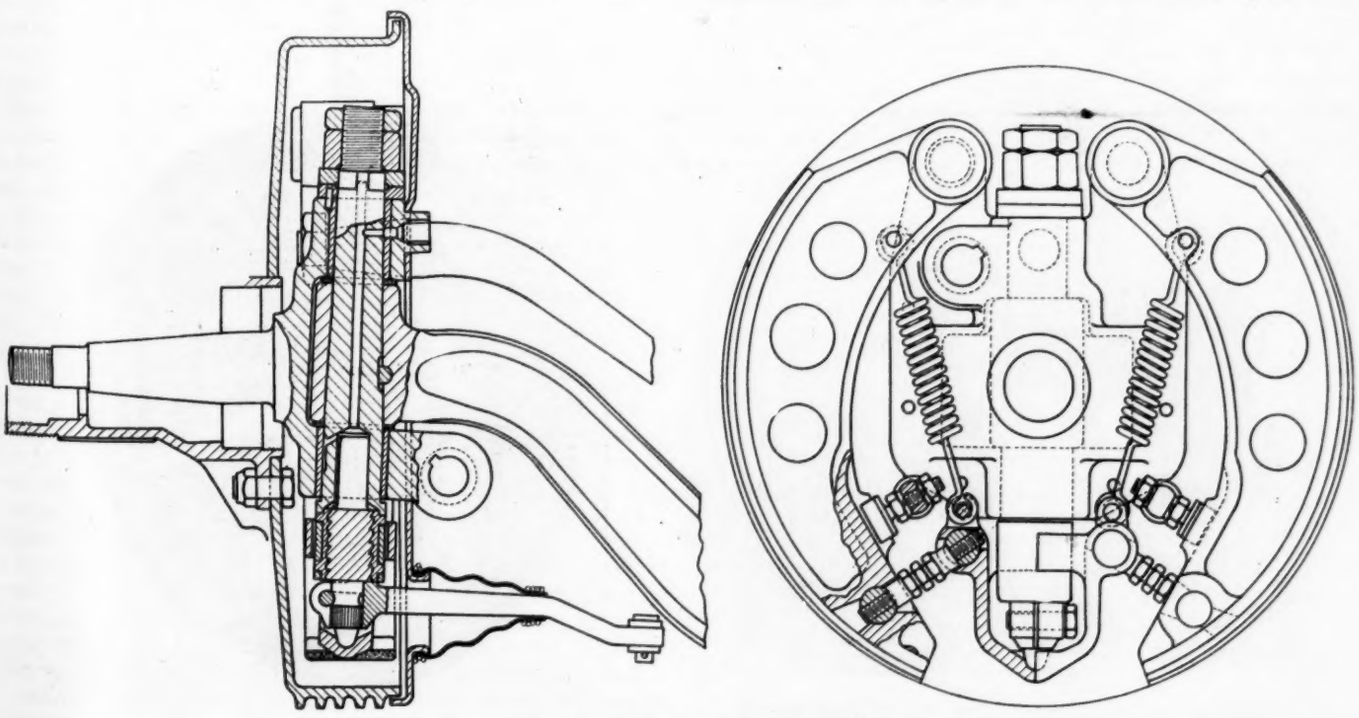


Fig. 1—Normal type of Serex front wheel brake

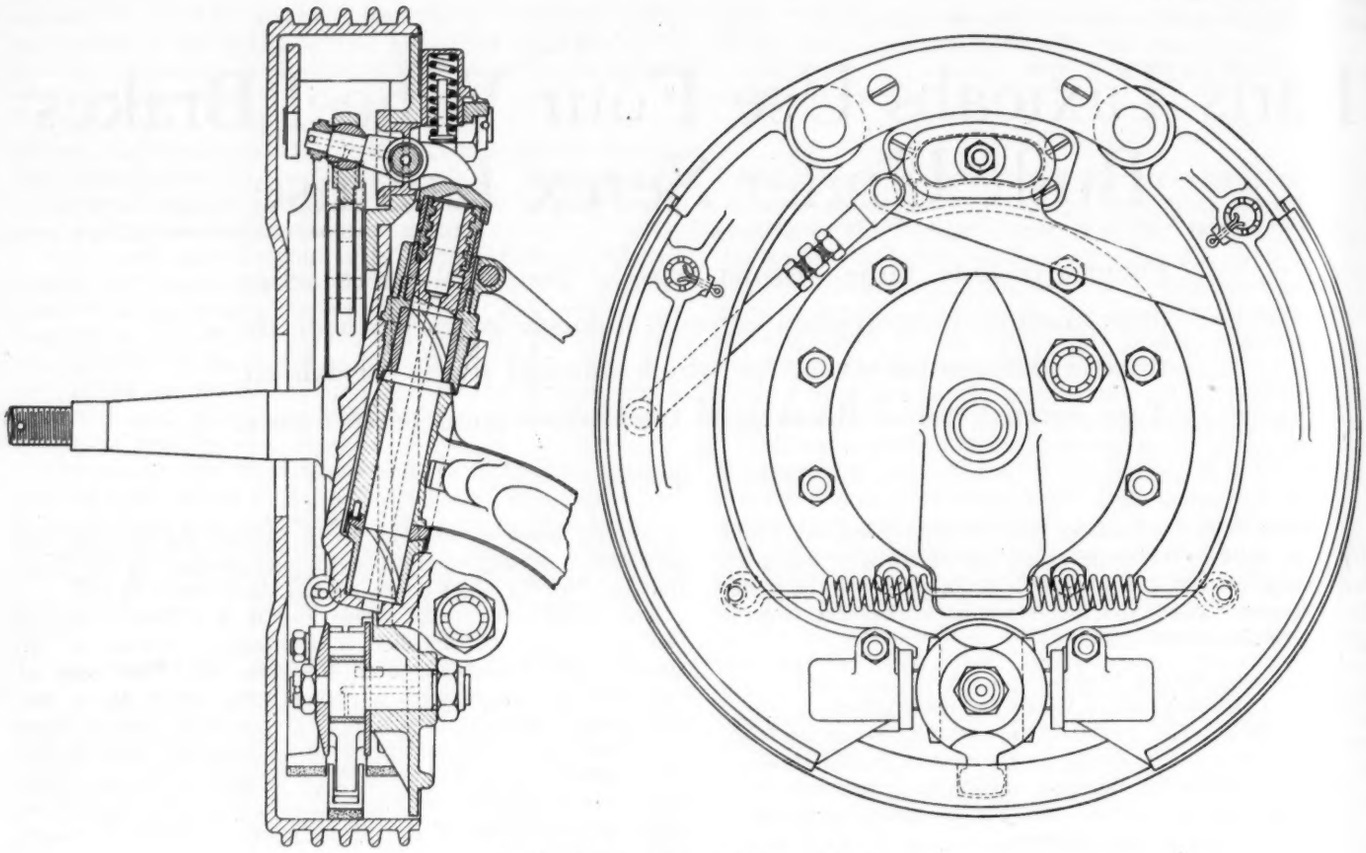


Fig 2—Serex front wheel servo brake

instead of being mounted on a fixed shaft, is carried on the free end of one of the brake shoes and operates on one side by reaction on its own shaft and on the other side by thrust on the face plate of the opposite shoe. With this device, the braking effort is much more powerful ahead than reverse and is about two and a half times more powerful than a corresponding size brake mounted in the normal manner.

Tests of the Serex brake were carried out this year on Brooklands track with a 183 cu. in. Bentley car weighing 3309 pounds with driver aboard. This car was fitted with normal hand-operated brakes on the rear wheels and pedal-operated Serex servo brakes on the front wheels. Tests were carried out with rear wheel brakes only, with front wheel servo brakes alone and with the two sets together.

The brakes were applied when the car was traveling at 50 miles an hour and a moving picture machine took 16 views per second as the car ran over a given line before

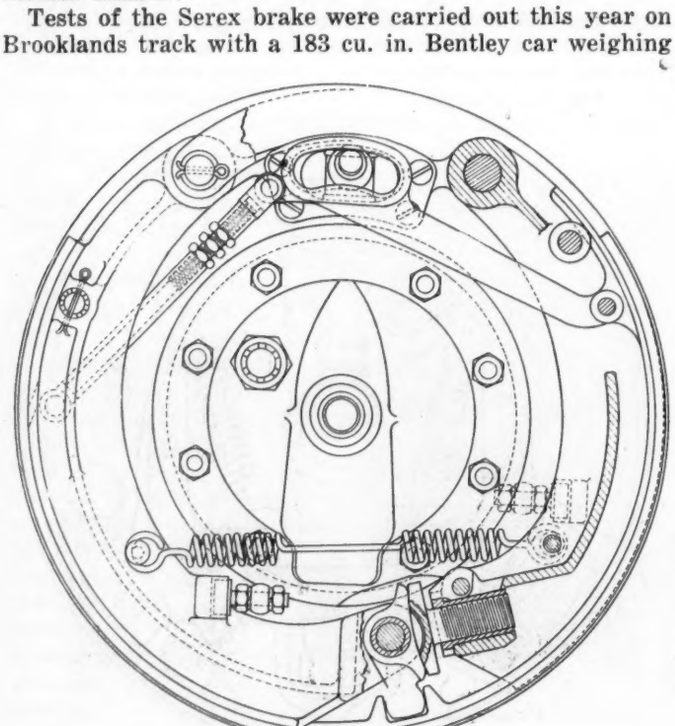
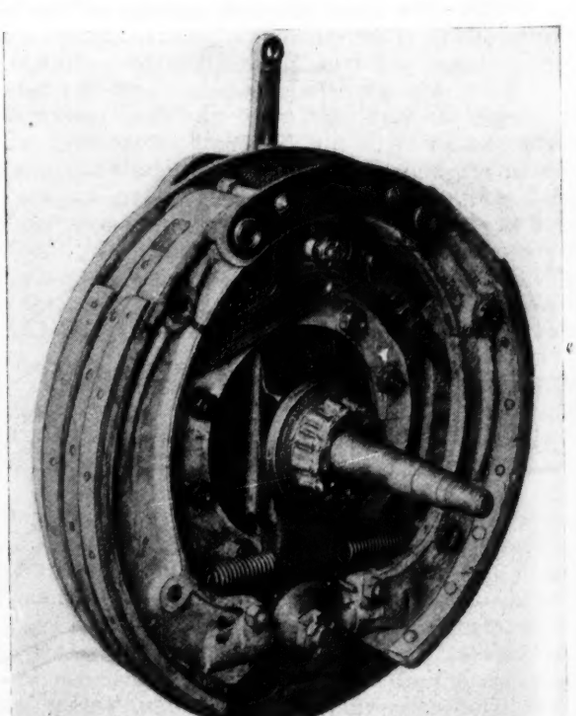


Fig. 3—Serex differential type servo brake



Photographic view of Serex servo brake

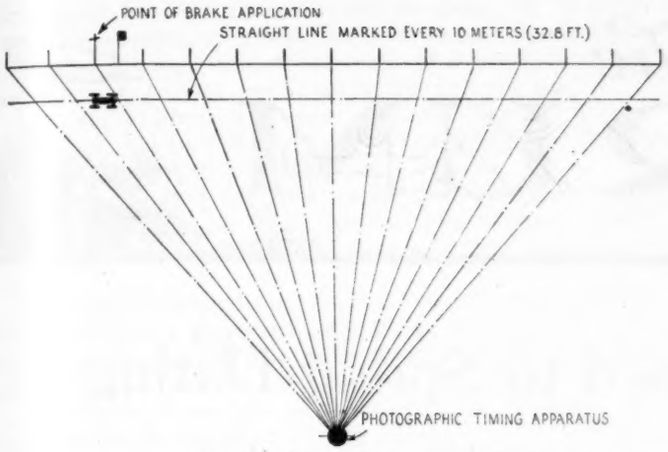


Fig. 4—Diagram illustrating method of conducting brake tests on Brooklands track by means of a moving picture machine

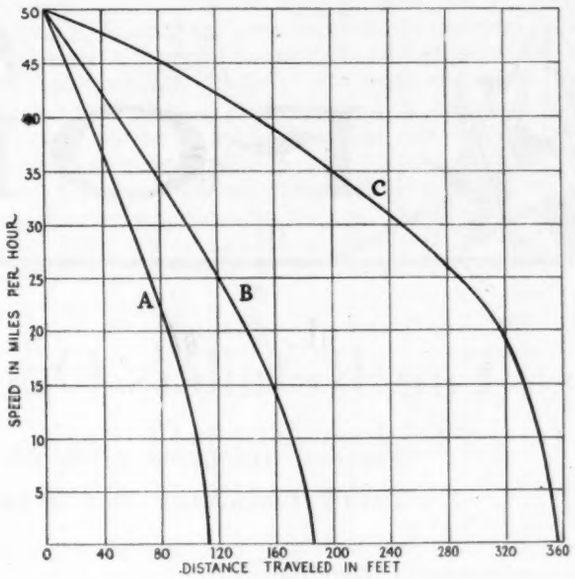


Fig. 5—Brake performance curves, based on tests made on Brooklands track July 20, 1923. (A, with servo brakes on front wheels and regular brakes on rear wheels; B, with servo brakes on front wheels alone; C, with rear brakes alone)

a background with white stakes at intervals of 10 metres. The results show that the car was brought to a standstill in 8 3/10 seconds and 119 yards with rear wheel brakes only, in 5 9/10 seconds and 62 yards with front wheel brakes and in 3 6/10 seconds and 39 yards with front and rear wheel brakes.

New Die-Casting Machine Placed on Market

A DIE-CASTING machine which is said to be simple to operate, foolproof and capable of a high production rate has been placed on the market by Edgar N. Dollin who has formerly been an executive in various die-casting concerns well known in the automotive industry.

As will be seen from the accompanying cut, the machine rests upon a metal base, at end of which is a gas or oil fired metal pot fitted with an air control valve B. The die-holding and operating mechanism includes an air cylinder C into which is fitted a plunger piston used to open and close the die blocks D, one of which is mounted on the movable die plate E. Motion of the die plate lowers and elevates the carriage about a hinge under the operating cylinder.

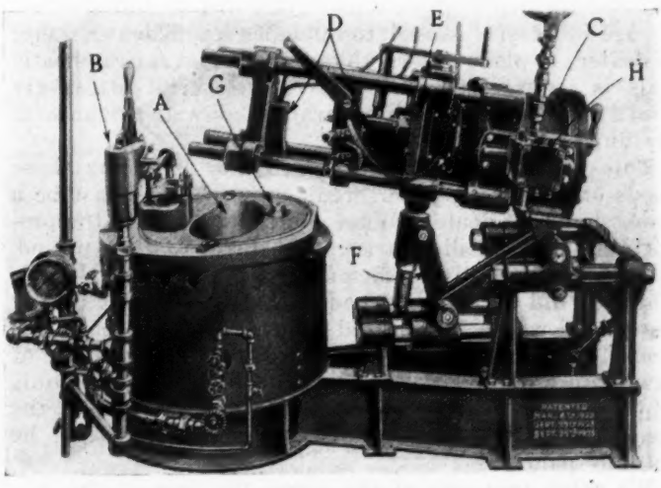
When the carriage is lowered the dies are forced against the nozzle G with considerable pressure. This is accomplished by opening a control valve in the valve box H and thus admitting air to the cylinder C under 200 lb. per sq. in. pressure. Dies are now closed and ready to receive the molten metal from the metal pot. Motion of the metal valve B admits a charge of metal to the heated nozzle goose neck, which is integral with and passes under the pot. This charge is then shot into the die under an air pressure of 400 lb. per sq. in.

To open the valve B the operator must leave his station at the valve box H and pass behind a metal screen, not shown in the cut. The screen is so placed as to protect him from being struck by molten metal which may issue from the parting in the dies.

After the metal is shot, air pressure on the nozzle is released and the operator returns to the first station where he manipulates the valve which elevates the carriage and opens the dies. The air at 200 lb. pressure in the cylinder is not exhausted to atmosphere but is returned to a receiver at 100 lb. pressure, whence it is drawn by an air compressor and again compressed to 200 lb. This method of control is said to effect pronounced economies in air consumption. It constitutes one of the important patented features of the machine.

The machine is said to be capable of handling aluminum as well as zinc, tin and lead alloys and is of such size as to accommodate practically any die-castings required in automobile manufacture. Some important dimensions follow: distances between centers of bars, 16 in. vertically and 19 in. horizontally, stroke 10 in., greatest die depth 18 in.,; diameter of die carriage cylinder, 14 in., giving total pressure of 30.787 lb., with 200 lb. air pressure; pot capacity 1000 cu. in.; recommended floor space for machine and two operators, 9 x 10 ft.; shipping weight, 3500 lb.

It is stated that practically any intelligent workman can operate the machine and that it is capable of over 200 operations per hour on long run jobs. It is said to have ample power to pull cores and slides. The maker claims that the machine is a good economic investment for concerns requiring about $225 worth of castings per day.



Dollin machine for making die castings of aluminum, zinc, tin and lead base alloys

Tire Retailers Opposed to Spring Dating

Factory executive gives his views on merchandising practices. Truck marketing and aviation are discussed in other letters.

Editor, AUTOMOTIVE INDUSTRIES:

We are not in favor of any spring dating proposition. As I understand the recommendations of the Rubber Association of America concerning modifications of spring dating policy, certain sections of the country are favored with longer terms than other sections because of varying climatic conditions. We do not believe that this plan will function properly, because this difference in terms will be transferred from one section to the other, either through organizations not favoring the policy or through competitive organizations for personal gain.

We are dead opposed to any form of so-called spring dating policy. We do not believe that the dealers should gamble in their own line of business. We advocate that no dealer's stock should be in excess of two weeks' supply, which means that he will have absolutely no loss in case of a decline for stock on hand, and which means that prices will not fluctuate to the degree that they have in the past.

We all realize that supply and demand govern the price and we realize that in going out and selling spring dating orders in October through until March 1 that the dealers are purchasing on a gamble in anticipation of the business that may be at hand next year and that they are purchasing because it is long-time payment and the purchases are not made in accordance with their requirements.

Therefore, it is a fictitious market which creates an increased demand on raw materials and if manufacturers are successful enough to influence a sufficient number of dealers to place orders, then the demand for raw materials is so excessive that the raw material prices are bound to advance, which naturally shows an advance in the finished product.

This profit, however, for the dealer who has these goods on hand is a paper credit only. There must be a time when that dealer cannot continue to buy in the proportions that he did during the spring dating period, but must be permitted sufficient time to resell those goods which he did purchase. Then during this lull, or during the period which is required for the dealer to move his stocks, the manufacturers are in a slump and the price of raw materials slumps, causing a decline which not only wipes out the dealers' paper profits but also causes the dealer a further loss by prices going lower than he actually paid.

We think that one of the worst features of the tire business at the present time is the spring dating proposition, in combination with the fictitious list price which has been in vogue on standard high grade tires for the past several years. These list prices do not represent a true value of the merchandise but are simply a catchpenny sales proposition allowing the unscrupulous manufacturer to quote excessive discounts from the so-called standard list.

With the proper retail price placed upon the various makes of tires, there can be no excessive discounts quoted. Therefore list price cutting and other objectionable features which have entered into the tire business might be eliminated. Excessive discounts from a fictitious list have attracted to the tire business in the last few years, the worst class of merchandisers which has ever congregated under one business flag.

We sincerely believe that the recent price cut by a majority of the standard companies on their nationally known, nationally advertised lines has been the greatest step toward assisting in stabilizing the tire business that has occurred in the past few years—as the prices now quoted on first quality, standard, nationally known tires represent TRUE VALUE price for the quality of merchandise and does not admit of any fictitious discount selling from a fictitious list.

JOHN H. DIEHL,
Vice-President, The Mason Tire & Rubber Co.

Speed Should Govern Inflation Pressure

Editor, AUTOMOTIVE INDUSTRIES:

I have noted several rather unjust statements in the technical press lately regarding air cushion or balloon tires. These statements are predicated upon either a lack of knowledge of pneumatic tire action or are deliberate falsifications.

Proper pneumatic tire inflation is regulated as much by the speed as the load. A large closed car using 33 by 5-in. tires weighing over 5000 lb. will carry 75 lb. per sq. in. air pressure. A racing car using 33 by 5-in. tires and weighing 1800 lb. also carries 75 lb. air pressure, because the speed is over 100 m.p.h. and with less pressure in the tires they would be "sneakers" and unsafe.

Now the big closed car with the 5-in. tires inflated to 75 lb. pressure is most of its life bumping around at 25 to 40 m.p.h., and at those speeds getting very poor pneumatic action. Shoot it up to 60 or 70 m.p.h. and the pneumatic action is excellent.

Under present-day traffic conditions, with a Ford behind every bush or corner ready to jump out in front any time of day or night, this 60 m.p.h. business is pretty far fetched, as not one-tenth of 1 per cent of car mileage is anywhere near that speed or ever can be.

The larger lower air pressure tires, like all others, are and should be inflated for the speed you are having to knock around at in daily use.

If when inflated for that speed they are shot up to 70 m.p.h., of course they are "sneakers" and unsafe and have got to have higher pressure for the unusual speed.

The whole proposition is very simple and logical; the small high air pressure tire is not functioning much at the speed most of the mileage is made at, but does commence to function at the higher ranges.

The larger lower air pressure tires do function and work at the speed most of the mileage is of necessity made at, but are too soft and flexible for the higher range.

Remedy this condition by more air and the higher speeds can be taken even better and more safely than with the smaller tires.

A. L. PUTNAM,
Research Engineer, Motor Wheel Corp.

Merchandising and Service Are Major Truck Problems

Editor, AUTOMOTIVE INDUSTRIES:

You surely hit the nail squarely on the head in discussing the problems of the smaller automobile manufacturers in the article in which you said "the two greatest problems of any producer (I'd say assuming he has a *good* product and good production facilities) are those of *Merchandising* and *Service.*" Of course, there can be no service problems until there is some substantial measure of distribution.

You very accurately point out where *many* producing companies go wrong by saying "that many who do *business* in a limited area are using national advertising." That method seemingly has been the rule rather than the exception in the automobile business and is especially true as regards the majority of small (quantity) producers. Too often advertising campaigns have been laid out with little or no real marketing or distributing analysis to guide the promotion work. In many cases analysis has been attempted with inadequate experience and an entire lack of understanding. In many cases the factory sales departments have offered very little help in this very necessary work because of their not having had any previous experience, knowledge or data from which to draw.

You point out the advisability of small producers making use of dealers who handle other but non-competing lines. Many have tried this and it works well. In fact, the successful small producers almost always work along this line. It is the *logical* course.

Why not go a step farther? Many small producers cannot afford top-notch territory men for certain districts. Yet, if neglected, those very districts may mean failure for the factories. Why cannot these small non-competing producers get together, not as a merger, but to hire some really high grade territory men?

Obviously, the various factories uniting to hire territory men would have difficulty in agreeing on the *men,* the *plan* of work and the *control* of the travelers. Why could not some outside marketing organization do all this most efficiently? The *trained* men of such an organization, covering new territory very carefully for several factories, would keep in constant touch, take advantage of the opportunity and actually "deliver" for each and every factory.

This has worked in some automotive lines and this sort of a plan will be in active operation for several factories this coming year. Why is this not the *logical* "line of battle" for these smaller producers when, as a marketing plan, it promises *intensive* work where heretofore the producers have either had no representation at all or only spasmodically, and without any satisfactory results?

LON R. SMITH,
President, SMITH & WILSON, INC.

French Debt Would Pay for Aviation Support

Editor, AUTOMOTIVE INDUSTRIES:

France owes the United States a tremendous amount of money, which she says she is unable to pay us. Our aircraft industry is starving for the lack of appropriation by Congress of funds to be used in aircraft for national defense. France is purchasing aircraft by the thousands, and by purchasing these aircraft in quantities is building up a tremendous airplane industry in their country, one French concern alone having sold 215 sport planes in a year.

In this country there is little or no commercial aviation excepting that which is represented by the use of old-time obsolete military aircraft which have been sold to individuals. These aircraft are old and inefficient and hence give the public a bad impression. The manufacturers have no money to construct and properly put before the public a modern type of airplane because they are too poor to do so, and cannot obtain financial support from the banks for that purpose.

The Night Mail, with its thirty-hour flying demonstration between New York and San Francisco, has proved the immense possibilities of commercial aviation in this country, yet they are having to fight for a few million dollar appropriation for the continuation of this service. If France is to continue to owe this country money and at the same time purchase thousands of aircraft, why not have the money used in the purchase of these aircraft spent in this country? The aircraft concerns need this money; they are starving for lack of sufficient work. Individuals owning these concerns are supporting them out of their own pockets. Is this fair when the French industry is thriving on money which otherwise could be paid to this country and used for the purchase of aircraft for our Air Mail Service and national defense?

PAUL G. ZIMMERMANN.

IN connection with the description of the Curtiss airplane, winner of the 1923 Pulitzer Trophy, published in AUTOMOTIVE INDUSTRIES Oct. 11, the following corrections should be made:

The Curtiss engine designation should read D-12 instead of C-12, as printed. This latter model has not been in production for several years. The compression ratio should be 6.0 instead of 5.9, and when compared with the increased bore results in increasing the output by 30 hp. The weight of the engine minus accessories is 675 lb., giving a power-weight ratio of 1⅓ lb. per hp.

Automotive Market in Latvia Is Small But Worth Cultivating

Government is fully aware of motor transport value. Encourages use of tractors. Low tariffs favorable to vehicle importations. One hundred and fifty American vehicles bought last year. Sales are likely to grow as economic stability increases in country.

By E. C. Petrie

LATVIA, the middle of the three Baltic Provinces that have detached themselves from Russia, is a market worth the attention of American manufacturers. Fighting did not actually cease until 1920, yet so soon did this Republic settle down that the budget for 1922 showed a balance in favor of exports.

Apart from its natural resources and geographical situation, Latvia's rapid strides toward stability were to a large extent brought about by able government—a Government fully aware of the need for motor transport and power farming to put the country securely upon its economic feet. This is instanced by the fact that the current budget allotted 38½ million lats (1 gold lat equals 1 gold franc) to the development of internal communications. Although a considerable proportion of this sum is being devoted to railroad regaging and construction, a large amount is being devoted to the building of highways.

The chief value of railroads to Latvia lies in their use for the transport of the imports and exports of Russia from and to Western Europe and America. This transit trade is growing so rapidly that traffic in 1922 was 300 per cent greater than in 1921, while for the first six months of this year traffic had increased 100 per cent as compared with the corresponding period of 1922. This is a point that the American manufacturer who is keeping an eye on the renaissance of Russia should note.

So far as the development of the Republic itself is concerned, however, the motor vehicle seems to suggest the best means of transport. No part of Latvia is more than 1000 ft. above sea level, while two-thirds of its area lies less than 60 miles from the Baltic. Even the villages on the Russian frontier are only 150 miles from Riga, although, possibly, feeder highways to the railroads suggest the most economic method of getting the country's timber, flax and agricultural and dairy produce to the ports.

Population Is 1,600,000

Latvia is slightly larger than the State of West Virginia, and the census for 1920 shows that the population is just short of 1,600,000. The Lats are surprisingly well educated and evince a tendency to follow their Government in adopting progressive methods. The farmers especially are devoting their energies toward the efficient development of their holdings.

The national wealth of Latvia is estimated at 5,124,000,000 lats, agriculture being estimated to value 2,847,000,000 lats. Industrial undertakings increased from 1388 in 1921 to 1535 in 1922. The national debt is only 51,000,000 lats and half of this is due to the United States.

Recent inquiries for road-making machinery show that road construction is being seriously undertaken. In certain parts of Courland marshy terrain makes the building of roads difficult, but over the greater portion of the country roads can be negotiated all the year round. Cement is manufactured locally and a plentiful supply of construction material is to be found in the center of the Republic.

It is estimated that there were about 200 passenger cars in Latvia at the end of 1922, and of these 135 were registered in Riga. At the same time it was announced that 68 trucks and 95 motor cycles were operating in the capital. These figures are surprisingly low for a city with a population of 500,000 inhabitants and suggest considerable room for expansion.

Riga Has Narrow Streets

At the same time Riga's streets are narrow and winding and considerable improvements will have to be introduced before motor transport can develop unimpeded. As matters are at present only vehicles with comparatively short wheel bases can operate with any degree of freedom.

Up to last year American and German manufacturers shared the Latvian automotive market between them. However, although German is the business language of the country, exchange troubles have resulted in business going in favor of America.

Last year the United States sent 100 passenger cars, 7 trucks, 31 tractors and parts and tires to the value of $4,486 and $280 respectively to Latvia. During the first six months of this year business so increased that American manufacturers sent into the country 67 passenger cars, 36 trucks, $2,112 of parts and $16,379 of tires, while in the first three months no fewer than 143 American tractors entered the Republic.

These figures by no means represent the total of American automotive products imported. As is well known, Latvia comes within the area of export activity of the Ford assembly plant at Copenhagen, while other American manufacturers based at this port have also effected sales in the Republic.

At least two American cars are represented in Latvia itself, and recently a further agency was sought for American light and cheap cars, 1½ to 3-ton trucks and tractors. The Fiat Co. is taking steps to develop sales here, while an agency on a commission basis was recently sought for British automobiles, motorcycles and tractors.

Woods suitable for body construction abound in the country and there is an increasing tendency to import chassis only and fit locally-made bodies.

As a result of increased agricultural exports, the assistance of the Government and the growth of the cooperative movement, tractors are in good demand. According to a local estimate 66 tractors, inclusive of motor plows, were in the country at the end of last year, 58 being of 5 American makes, 7 of 4 German makes, the remaining one being an English machine.

Last year the Government purchased power implements to the value of over 600,000 lats for distribution to farmers and credit allowances of from 30 to 50 per cent were given. Local organizations using tractors are encouraged to till what has previously been fallow land by a grant of 3 lats per lofstele (.917 acres). Similar land plowed by horsepower only receives half this allowance. Fuel imported for tractor propulsion comes into the country at a reduced rate. The Government also pays a bonus on one-man tractors of less than 30 hp. if a stock of repair parts is kept at Riga and free instruction given to purchasers.

It has recently been stated that the import tariff is to be radically revised and reduced. The Government has always done its utmost to encourage motor importation by enforcing a minimum of taxation, trucks, for instance, only being called upon to pay an import tax of 2 per cent ad valorem. It is thought, moreover, that in the near future all machinery imported for transport purposes will enter the country free of all customs duty. There is no charge for storage in customs warehouses for the first ten days after goods are landed. After this period a charge ranging from .01 to .04 gold lats per day is made.

Long-time credits are the most common forms of payment and firms who are prepared for the settlement of their bills until their vehicles have been running for some time in the service of buyers are the most likely to effect business. Manufacturers should note that the metric system of weights and measures comes into operation on Jan. 1, 1924.

Single Passenger Taxicabs Built in France

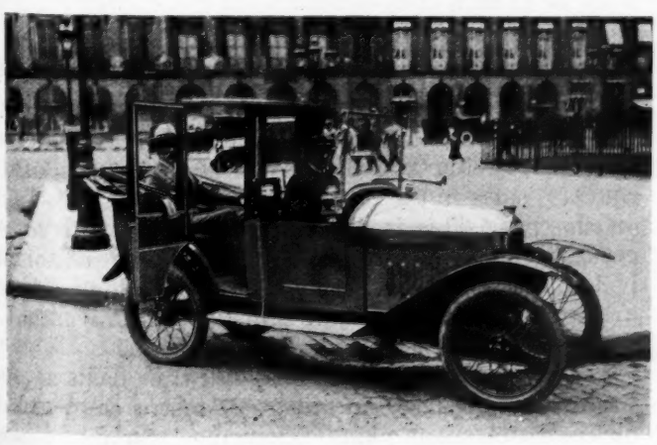
TWO HUNDRED AND FIFTY single passenger taxicabs, operating at one-half the rates of any other taxis, have just started to operate on the streets of Paris. This is an attempt to meet the requirements of business men who generally travel alone and who want a faster means of locomotion than subway and trolley cars, at the lowest possible price.

The one-man taxis cover the first 600 meters for 60 centimes, and additional 200 meters at 10 centimes, this being equivalent to 80 centimes per kilometer or, at present rate of exchange, 8 cents per mile. André Hamon, the promoter of this scheme, declares that these low fares are possible not only because of reduced running costs but because of the saving on overhead charges.

There will be no night or Sunday service, and no attempt to do railroad depot or theater work. The cars will come on the streets at 8 in the morning and will be off at 8 at night. In consequence, there will be only one set of drivers and one garage staff. Mechanical overhauls will be carried out on Sundays.

Drivers will take 50 per cent of the earnings, compared with the 30 per cent usually given. As they have special privileges in the way of regular hours and the absence of Sunday service, they will be subject to a much stricter discipline and will be dismissed on the third justified complaint lodged against them by the public.

The chassis made use of is a small Peugeot with a four-cylinder 2.17 by 3.15 in. engine. Except for a stiffening of the frame members at the rear, there are no mechanical changes. The body is a landaulet type similar to the four-passenger cabs except for dimensions. As there will be very little night driving, even in winter, oil lamps only are fitted. There is no electric starter. If successful, the first fleet will be supplemented by 750 more cabs at an early date.



New Paris taxicab

Germans Use Kerosene for Trucks

A MAJORITY of the trucks exhibited at the recent Berlin show were adapted to use kerosene and other heavy fuels.

A six-cylinder kerosene-burning truck was exhibited by the Nationale Automobil Gesellschaft, a subsidiary of the German General Electric Co. To obviate distribution difficulties, each of the cylinders is provided with a separate carbureter. To insure proper vaporization of the heavy fuel, the temperature of the cylinders is kept high by means of control of the water circulation. The air inlets are located adjacent to the exhaust manifold, hence preheating of the carbureter air is assured.

An auxiliary carbureter supplies the cylinders with a small amount of additional light fuel mixture while starting and while driving in traffic, so as to obviate the difficulty usually encountered with heavy fuel when the engine load is suddenly changed.

The consumption of light fuel is said to amount to only 6-10 per cent of the total, and no trouble is said to be encountered in operating on kerosene alone on the open road.

During the past several years the Maybach Automobile Works of Germany have been turning out a car with electric transmission, but a new model just announced has a two-speed planetary gear instead, the electric transmission evidently having proved not of sufficient advantage to warrant its cost and additional weight.

Internal expanding brakes are used instead of the usual bands for actuating the planetary gear, and all speed control is by pedals, though the emergency brake is still controlled by a hand lever.

The engine is a six-cylinder one of 70 hp. and with a car weight of 4800 lb. should permit of doing all ordinary driving on high. Another feature of the new car is ball bearing spring shackles.

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Subscription Rates
United States, Mexico and U. S. Possessions.....$3.00 per year
Canada ..... 5.00 per year
All Other Countries in Postal Union..... 6.00 per year
Single Copies .....35 cents

Entered as second-class matter January 2, 1903, at the post-office at New York, New York, under the Act of March 3, 1879.

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Member of the Audit Bureau of Circulations
Member, Associated Business Papers, Inc.

Automotive Industries—The Automobile is a consolidation of The Automobile (monthly) and the Motor Review (weekly), May, 1902, Dealer and Repairman (monthly), October, 1903, and the Automobile Magazine (monthly), July, 1907.

THE CLASS JOURNAL COMPANY
U. P. C. Building, 239 West 39th Street, New York City

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A Momentous Merger

THE term epoch-making may properly and appropriately be applied to the merger of the two large business publishing organizations, The Class Journal Company and The Chilton Company, which is announced on another page of this issue. In united effort for the advancement of the industries they serve, a new period of usefulness is begun. It will be a period of extended service. It will be a period in which greater accomplishment is assured by the combination of the resources and experience of the two largest organizations of their kind, who will labor together now with mutually augmented strength and influence for the welfare of the automotive industry and all its many branches.

The Class Journal Company and The Chilton Company have grown consistently as the years have passed from the very beginning of the industry. Each has built up a group of business publications in the automotive field which, when conducted separately, have been competitive to some extent and yet when brought together, as they now are, can and will supplement one another and, by the elimination of duplicated effort, will serve both subscribers and advertisers with a maximum of value at a minimum of cost.

All parts of the field are covered, all branches of the industry are served by the merging of these two groups of business papers. Manufacturing, merchandising, maintenance, service, production, engineering, exporting and the various phases of each of these industrial and trade activities as they apply to passenger cars, trucks, tractors and parts and accessories are all included in the scope and activities of the publications, which will work now with coordinated purpose and supplementing editorial appeal for the good of the industry as a whole and all groups individually which are parts of it.

Parking Impedes Traffic

INDISCRIMINATE use of city streets for parking purposes is responsible in large measure for traffic congestion. Serious as the situation is now, it is rapidly growing worse.

The percentage of cars parked in the streets in relation to the number owned probably is smaller in New York than in any other American city, but the Merchant Truckmen's Bureau of that city has issued a statement asserting that traffic congestion cannot be relieved until the Board of Aldermen passes an ordinance prohibiting street parking of passenger cars in certain zones. It contends that a recent measure reducing the speed limit is not a step in the right direction and there is merit in this claim. Traffic should move swiftly, under proper regulation, rather than more slowly.

The plaint of the truckmen is that deliveries of goods are almost impossible in certain sections because the streets are all cluttered up with cars standing alongside the curbs. Almost at the same time the Police Department has complained that passenger car owners will not use the free parking spaces provided for them in many sections of the city, because doing so would involve walks of a few blocks.

It may be that restrictions against curbside parking in the business districts of cities will make motoring less popular among persons taken to those sections by business or pleasure, but the time is near when driving will be virtually impossible unless something is done to relieve congestion.

Sales Slump in Soft Coal Fields

WHILE the market for automotive products is improving steadily in the far sections of the country, sales in the bituminous coal fields have fallen off sharply. This is due to the fact that with an exceedingly mild fall, coal demand has been abnormally low and there has been over-production. Miners are working on short time and little improvement in conditions is expected for some time.

When they are working on a full-time basis at good wages, miners are avid buyers of motor cars, usually on the installment plan. They meet their payments promptly as long as work is plentiful but when it

slows up and they are confronted with more pressing necessities, dealers have to repossess the cars. The result will be a distressing used car situation with clogged channels for new products.

All of which merely serves to emphasize the need for automotive sales managers to keep one jump ahead of economic developments in every corner of the country.

Visit the Service Stations

TO design the best possible automobile within a given price range requires more than a sound knowledge of theoretical engineering principles. A full understanding of service requirements is needed before a design can be laid down to meet the conditions under which the finished product must operate. The service station is the best place in the world for the automotive engineer to get essential information about what the public wants and what sort of performance his previous designs are giving.

Engineers today usually admit the value of lessons learned from the service station, but too frequently they let it rest at that. Relatively few of them make a definite effort to get maintenance data, to learn the problems and difficulties the service man is encountering, and to lay out future designs in such a way as to eliminate as many of these troubles as possible.

The manager of one of the biggest service stations in the country, located at a metropolitan center, said the other day that the chief engineer of his factory had never been inside his service station since he took charge over two years ago. The man in charge of another service unit of equal size, connected with an equally prominent car, had never met the chief engineer of his organization until he ran into him at a convention a few weeks ago.

The chief engineer of an automobile company probably could spend two weeks every year in no more profitable way than in visiting the service stations maintained by dealers for the car which he has designed. He would get a vast amount of practical information of value in designing next year's new model. Research in the service station is as much needed as research in the laboratory.

Dealer Organizations Expanding

MANUFACTURERS of high-priced cars are just beginning to reap the real benefits of missionary work done by makers of large production lines in the smaller towns of this country. While it is still true that most cars selling for over $3,000 probably are confined to towns of relatively large size, tremendous strides have been made by expensive car builders in extending their sales contacts to smaller communities.

This trend is evidenced by the shift in dealer representation which has taken place since 1921. In that year, according to figures just compiled from the *Automobile Trade Directory* mailing list, a group of high-priced cars had a total of 567 dealers throughout the country, of whom about 9 per cent were located in towns of less than 5000 population. In October, 1923, the total number of retailers for this group of cars had increased to 2677, of whom 38 per cent were in towns with less than 5000 population.

The shift can be visualized better, perhaps, by the statement that in 1921, 42 per cent of all the dealers for these cars were in cities of over 100,000 population, while in October, 1923, the percentage had dropped to 24.

The marked increase in points of retail contact has doubtless been made possible by the thoroughness with which the low-priced vehicle has permeated every nook and corner of the United States, thus creating a demand for more luxurious vehicles which otherwise would never have existed.

An actual shift in the registration distribution of the expensive cars is not to be expected, of course, simultaneously with the shift in dealer representation. Actual sales must follow retail contacts.

Coolidge Favors Good Roads

"No expenditure of public money contributes so much to the national wealth as for building good roads."

THE automotive industry and all users of motor vehicles may well rejoice at this ringing declaration in President Coolidge's first address to Congress. Its brevity adds to its strength and there is no mistaking the meaning of his words. Feeling this conviction, it is only natural that he should have made a liberal proposal in the budget for continuation of Federal aid in highway building. His support will hearten greatly those who have been carrying on the fight for more and better roads.

There was no direct reference in the message to coordination of transportation. In fact, the term "multum in parvo" might well be used to describe what he had to say on the whole subject of transportation. From the standpoint of the railroads it probably was plenty.

Mr. Coolidge believes Congress should order without delay an entire reorganization of the freight rate structure and that unless consolidations are effected they should be forced by the Government.

These are subjects about which the carriers may be expected to squabble indefinitely, unless some means are found to expedite agreement. They will agree unanimously with the President, however, that the rate of return permitted them must be fair, because otherwise it would be confiscatory, and confiscation is unconstitutional. They may not be so well pleased with his contention that the Railroad Labor Board should be left as it is to protect the public interest unless the groups interested can agree on an improved substitute for the statute which created the board.

Mr. Coolidge advocated expansion of water transportation by a moderate resumption of the work of opening intracoastal waterways; the improvement of the waterways from the Great Lakes toward the Gulf of Mexico and the development of the power and navigation project for the St. Lawrence River.

Ask Congress to Repeal Excise Tax

3 Separate Measures Introduced in House

Representative Clancy Files Bills and Declares Discrimination Should End

WASHINGTON, Dec. 10—Repeal of the excise taxes on automobiles, trucks, motorcycles, tires, inner tubes, parts and accessories was asked today under the terms of three bills introduced in the House by Congressman Robert H. Clancy (Dem.) of Michigan. The repeal of these taxes, characterized as discriminatory and unjust, would mean a saving of approximately $144,000,000 to the automotive buying public during next year, according to Clancy.

The fight for the repeal, which is being fostered by the National Automobile Chamber of Commerce, is to be made in Bill No. 2891 asking for the removal of the 5 per cent excise tax on automobiles and motorcycles; Bill No. 2892, for the removal of the 3 per cent excise tax on motor trucks, and Bill No. 2893, for removal of the 5 per cent tax on tires, inner tubes, parts and accessories.

By seeking the repeal of these items in three separate bills, the sponsors believe that should there be opposition to the automobile and motorcycle tax repeal, they would still have a chance to repeal the tax on trucks and accessories.

There should be no further discrimination, however, on any automotive product, Clancy declared in introducing the bills.

Calls Them Nuisance Taxes

"The revenue act of 1921," he told the House, "should be stricken out insofar as it relates to automobiles, trucks and accessories. The time has come for these taxes to be repealed, and as the great bulk of them is paid from my district, the east side of Detroit, it is fitting that I should introduce the bills for their repeal. They are excise measures and may be regarded as luxury, stigma or nuisance taxes." The tax on automobile trucks is absolutely indefensible on all three grounds. No one can say that an automobile truck is a pleasure car.

Continuing, he said:

The automobile truck tax is a tax on transportation, and as the railroad taxes of a similar nature were killed after the war, so should the automobile truck tax be eliminated.

Also the tax on repair parts, accessories and tires is indefensible. The repair parts are nuisance taxes and penalize a man who is having trouble with his car. As the farmer has the worst roads and the most trouble with automobile parts, the tax falls particularly hard on him.

The automobile proper is a necessity, and

(*Continued on page* 1231)

Business in Brief

NEW YORK, Dec. 10—Such irregular conditions for this time of the year as mild weather, rains and poor roads have been offset to a certain extent by the holiday buying trade, so that in summing up the situation the term "fair to good" fits.

The past week was marked by a break in cotton prices, following the recent rise, while there was considerable strength in both stocks and bonds. Grain was firmer and also hog prices, while the strength shown in November in raw materials was continued

Steel prices also continued strong and there has been a drop in petroleum prices. The coal market suffered somewhat in that there was a slackening in buying of anthracite, while further shutdowns of soft coal mines were reported.

Crop reports showed that winter wheat is in good condition, while wet weather, to a certain extent, has delayed the husking of corn. Unfavorable weather and a lower price have slowed the marketing of corn, while wheat marketing, only moderate in this country, continues heavy in Canada.

Car loadings for the week ending Nov. 24 dropped 1528 from the previous week, going to 990,217. This, however, is a gain of 43,575 cars over the same week a year ago. The total for the first forty-seven weeks of this year is reported at 44,974,690 in comparison with 35,926,147 for the same period in 1922.

Bank clearings picked up, the report showing an aggregate of $8,400,853,000, which is an increase of 38.9 per cent over the corresponding week a year ago.

The stock market was active and strong, rallying the latter part of the week because of the message of President Coolidge, although in the early part of the week there were declines caused by profit-taking and bearish operations.

N.A.C.C. Committee Asks Repeal Support

Manufacturers Urged to Make Wide Campaign for Elimination of Levy

NEW YORK, Dec. 11—The Taxation Committee of the National Automobile Chamber of Commerce has got behind the three bills introduced in the House of Representatives by Congressman Robert H. Clancy of Michigan, which call for the elimination of the excise tax on automotive products.

With the filing of the bills, the committee sent a letter to members of the Chamber over the signatures of C. C. Hanch, chairman; H. H. Rice, F. J. Haynes, David S. Ludlum, George M. Graham and Pyke Johnson, secretary, which commented on President Coolidge's recent message to Congress, and said in part:

While the message calls attention to the need for relief for the farmer through lighter taxation and dwells also upon the need for efficient transportation, no mention is made of any abatement of the discriminatory excise taxes levied against the motor vehicle.

It thus becomes apparent that while a hard fight will be made for tax reduction, the only possible chance for relief for those who drive cars is through a strong demand exerted directly upon Congress. This cannot be effectively manufactured. It must be a genuine protest based upon knowledge of facts.

If you believe with your committee that these taxes are unfair and should be removed, ask your dealer and your customers to take the subject up without delay and place the matter before your own representative in Congress, personally.

Representative Clancy of Michigan has just introduced in the House of Representatives, bills calling for the repeal of the tax on automobile trucks and wagons, other automobiles, parts and accessories, tires and inner tubes. We suggest you urge your Congressman to support these bills if you want the tax repealed.

Balloon Tires Optional on Reo's Line of Cars

DETROIT, Dec. 11—The Reo Motor Car Co. is offering balloon tires as optional equipment on its entire line of passenger cars. The tires are U. S. cords 32 x 6.

On the sedan, coupé, brougham and phaeton, the additional cost is $100 and on the phaeton $135. The additional cost in the case of the phaeton is due to the use of tuarc disk wheels, which are standard equipment on the other models. Wood wheels are standard on the phaeton.

Plants Getting Ready for 1924 Operations

December Output Will Drop Owing to Readjustments and Inventory Taking

NEW YORK, Dec. 10—The automobile industry may be said to be putting its house in order this month in preparation for the busy time that looms ahead with the turning of the year. The housecleaning in the main consists in the taking of inventory by those concerns which usually take advantage of the holidays to do this, and in tuning up the plants for the production of new models which are expected to be announced at the coming national shows in New York and Chicago.

In consequence December production will experience a noticeable drop, which may well be classed as seasonal and normal because of prevailing conditions. There is nothing at all alarming about this, and pessimists cannot take advantage of the drop because the automobile industry never has been in better shape than it is now, especially in a retail way.

Christmas is proving a banner time for the dealers, who report from every section of the country a holiday demand that cannot be met, although efforts were made weeks ago to stock up for this business. Closed models are moving fast, and it looks as if the warehouses will be emptied in order that Santa Claus may be able to fill his orders.

Stocking After First of Year

This holiday business has upset the calculations of manufacturers, who have been urging their retail representatives to stock up at this supposedly dull time of the year so that they will be able to meet spring demands. It looks now as if this stocking up cannot take place until after the first of the year, when most of the big companies have planned to push production to the limit.

Makers have every reason to believe that spring business will be such that there will be need for dealers to stock ahead of time, and they therefore are planning great manufacturing activities for the first quarter of the year.

December production most likely will drop below that of November, as it has done in the past years, so that no alarm should be felt if there is a drop of 5 or 10 per cent from November's 325,135. This will not in any way prevent the industry turning the four-million mark at the end of 1923. With only about 280,000 to go to reach this, those in the industry feel that the count at the end of the month will show production well over this. A 50 per cent gain over 1922, which itself established a record, is an accomplishment that well shows the condition of the industry at the present time.

Exceptional Opportunities in Field of Replacements Will Be Offered Parts Makers Next Year

AN INTERVIEW WITH PERCY BAXTER,
Sales Manager of the McCord Manufacturing Co.

By D. M. McDonald,
Detroit News Representative of the Class Journal Co.

Detroit, Dec. 12.

OPPORTUNITIES in the replacement field will be greater in 1924 for the manufacturers of reliable parts than ever before, in the opinion of Percy Baxter, sales manager of the McCord Manufacturing Co.

Production of new cars can fall considerably under the totals of this year but there will still be the largest replacement market the industry has ever known. Whether it is possible for such a large quantity of new car sales to continue for another year remains for the year to show, Mr. Baxter said. There is nothing up to this time to indicate that it won't.

There has been a change in the attitude of car makers toward the former so-called pirate part which gives the reliable equipment maker a chance to sell direct to the trade. Formerly manufacturers were opposed to this and insisted that all replacements be sold through them. This was due to the fear of inferior parts.

Car manufacturers in most cases have come to realize that the sale of reputable parts through independent dealers has added to the avenues through which their car might be serviced, thereby creating greater owner satisfaction. It is not a case of running against the former competition of the maker who sold inferior goods at lower prices, but of competing with makers who are selling quality goods at prices that are and must be competitive.

Experience has shown that if equipment makers are not to seek replacement business, someone else making a similar article will, and in most cases the latter will be inferior to the part replaced and will be sold at prices that are below fair competition. The best way for car builders to get replacement business is to get it in competition with reputable makers. Competition of this kind is what has driven out the real pirate maker and it is the only way to keep him out.

Business for the parts makers in the car equipment field has been hurt by the fact that there are always companies not formerly identified with the industry that are ready and anxious to jump in and take contracts whenever they have the opportunity. Car makers have found little difficulty in digging up new sources of supply when they sought change.

Conditions during the last few years and particularly in the recent past, said Mr. Baxter, have convinced him that no company or group of companies can control the industry over a period of years. There is too much desire for the new and novel to permit of any company continuously holding the whip hand. Other companies are bound to rise and fall back as their current models meet popular fancy, and a company would have to be tremendously successful to be always in the fore of style appeal.

Conditions in the parts field whereby makers of some parts were taking business at loss were blamed by Mr. Baxter for the most part on the makers themselves. To get business, makers have accepted it at cost or less and then have tried to discover new manufacturing methods by which they might turn a losing contract into a winner. In some cases they have been successful, to the advantage of themselves and the industry. Others have not. This kind of business, though far from general, exists in enough cases to hurt the standing of the industry and must be corrected sooner or later.

DURANT TEAM DISBANDS

LOS ANGELES, Dec. 10—R. C. Durant announces the disbanding of the Durant racing team, which he has maintained for more than two years.

N. A. C. C. Appoints First District Representative

NEW YORK, Dec. 11—I. Walton Schmidt has been appointed district representative of the National Automobile Chamber of Commerce in the Chicago territory, his mission being to make investigations for the industry on economic and market conditions. Schmidt formerly was assistant manager of the field department of the Chamber of Commerce of the United States.

In all likelihood the N. A. C. C. will appoint similar representatives on the Pacific Coast and in New England in the near future.

Krebs Truck Joins Amalgamated Motors

J. C. L. Krebs, However, Will Continue in Active Charge of Company's Affairs

PLAINFIELD, N. J., Dec. 10—Another addition to the recently formed Amalgamated Motors Corp. has been made through the taking in of the Krebs Motor Truck Co. of Bellevue, Ohio. The combination also includes the Northway, Winther and Bessemer-American properties.

C. W. Blackman is credited with having engineered the Krebs deal, and it is understood that shortly he will assume general supervision over the manufacturing operations of all plants involved.

Under the terms of the transaction stock control of the Krebs company has been acquired by the Amalgamated Motors Corp., but J. C. L. Krebs will continue in active charge of the company's affairs and will become a member of the Amalgamated board of directors. Additional working capital will be supplied by the new interests in the property.

J. C. L. Krebs organized the Krebs company following his withdrawal from the management of the Clydesdale Motor Truck Co., which he founded in 1912. Two years ago the company took over the plant formerly occupied by the Collier Motor Truck Co. at Bellevue.

It also is announced that the Plainfield division of the Amalgamated Motors Corp. has closed a contract for the construction of taxicabs for the Luxor Cab Co. of New York, and that a similar contract is pending for the Northway plant at Natick, Mass.

Gotfredson Starts Chain of Distribution Points

DETROIT, Dec. 10—Gotfredson Truck Corp. has located a sales and service branch at Los Angeles as the center of its truck activities on the Pacific Coast. The company will proceed with the development of a nation-wide chain of distribution points, this being a part of this movement. Selection of California as one of the first of these is because of favorable weather conditions for all year truck use.

Under the Gotfredson plan of service, which will be adhered to at all points, trucks will be given monthly inspections without cost for a year. The company will proceed with plans for national sales on the basis that complete service must be available before sales are made.

"SINCLAIR" CAR PROPOSED

ST. LOUIS, Dec. 12—Scheel Motors Corp., manufacturer of the Scheel rotary valve engine, has closed a contract with a syndicate of Eastern automobile men, represented by Arthur Sinclair, permitting the use of the Scheel engine in the proposed "Sinclair." Sinclair, president of the new company, claims that he has the backing of capital to the amount of $10,000,000, and that the financing of his company is practically complete. The factory is to be established at Indianapolis, he declares, and production is to begin within sixty days.

CLAIMS SOLE RIGHT TO "SUPER CHARGER"

PARIS, Dec. 1 (by mail)—Claiming to have registered rights in the word "super charger," the Daimler Motoren Gesselschaft is attempting to forbid its use except when applied to its Mercedes engine fitted with this device.

This being a general expression which was in common use in connection with aviation engines during the war, it remains to be seen whether the Courts will uphold the claims made by the Mercedes concern.

Coordination Meeting Dated for Washington

WASHINGTON, Dec. 11—Practical means by which to promote coordination of various forms of transportation will be considered at a transportation conference which will be held in this city under the auspices of the Chamber of Commerce of the United States the week of Jan. 7.

All members of the five committees which drafted reports on different phases of the transportation problem will be invited to attend the meeting, together with about 100 other representatives of the public and the transportation interests involved. The conference will be called by Julius H. Barnes, president of the Chamber of Commerce.

The Washington meeting will be followed by four regional meetings to be held at Philadelphia, Chicago, New Orleans and San Francisco. While these sectional sessions will be primarily to transact business of interest to the Chamber of Commerce, transportation will be one of the major subjects considered at each of them.

Sale of Personal Assets Ends Illinois Tractor Co.

BLOOMINGTON, ILL., Dec. 8—The last chapter in the history of the Illinois Tractor Co. was written when the personal property was sold at auction, realizing $12,000. This company was organized seven years ago and a plant constructed here.

A small number of tractors were manufactured and sold, but the farmers' strike forced a suspension of operations four years ago, and since then the plant has been idle. The money realized from the auction will be distributed among the creditors.

$500,000 New Money Obtained by Premier

Additional Funds Will Be Used to Expand Taxicab and Passenger Car Business

INDIANAPOLIS, Dec. 8—Negotiations for the refinancing of the Premier Motors, Inc., have been completed with the filing of mortgages with the county recorder for $500,000, executed by the Premier and the Line Belt Realty Co., which holds title to the real estate.

The new money is to be used for further expanding the production of Premier taxicabs and passenger cars at the plant of the old line company.

The sale of bonds for the company was effected some time ago, the officers state. Mortgages were made to the Fletcher American Bank as trustee for the bondholders, and the mortgages, though filed here this week, were executed about a month ago.

The taxicab production at the Premier plant is said to have been doubled within the last two weeks, and it is expected that by the early part of January the output will again be doubled. The large Premier factory is also being used for Monroe production, and the Victor Body Co. also occupies a portion of the buildings.

M. J. Ford Takes Over Keystone Forging Co.

NORTHUMBERLAND, PA., Dec. 10—The M. J. Ford Manufacturing Co. has taken over the Keystone Forging Co. of this city and henceforth will be known as the Keystone Forging Co. The company will continue the manufacture of standard forgings, such as yoke ends and brake rods for the automotive industry, in addition to making the Gemmer brake rod adjuster. These will be made in the old Keystone plant taken over by the Ford interests, the factory having a floor space of 75,000 sq. ft.

At the head of the consolidated interests is A. I. Spiro, who comes from the Ford company and who will serve as president. J. J. Axilrod, also a former Ford executive, is vice-president and sales manager. Ralph R. Irwin, formerly with the Studebaker Corp. and at one time sales manager of the American Bearing Co., is sales manager of the local company and will maintain an office in the General Motors Building, Detroit.

END OF DEPENDABLE TRUCK

GALESBURG, ILL., Dec. 10—A bill of foreclosure filed by the Mutual Building & Loan Association against the Dependable Truck & Tractor Co. has been approved by the Knox County circuit court. This marks the finish of a company organized during the war to manufacture a new type of combination truck and tractor.

Injunction Granted to Timken Bearing

Rebuilding Companies Permanently Enjoined from Making Use of Timken Name

NEW YORK, Dec. 10—Judge Augustus N. Hand of the United States District Court for the Southern District of New York has granted a permanent injunction against the Schuman-Tigar Bearing Co., Inc., the M. George Tigar Bearings Co., Inc., and M. George Tigar, all of New York, in the suit brought by the Timken Roller Bearing Co. of Canton, Ohio.

The defendants are enjoined "from selling or in any manner advertising, representing or offering for sale any roller bearings or parts thereof manufactured, assembled, converted, altered, rebuilt or repaired by said defendants or any of them, as 'Timken roller bearings,' and from using the name 'Timken,' or any name, designation or description of which the name 'Timken' forms a part in any manner whatsoever in connection with the sale, advertising or offering for sale, of such roller bearings or parts thereof."

Similar Cartons Prohibited

The injunction also prohibits the defendants making use of boxes or cartons similar to those used by the Timken company, inducing or attempting to induce dealers to handle any bearings which might be construed as being bona fide products of the Timken company.

The case against the defendants is outlined in Section 12 of the Timken company's bill of complaint, which says:

Upon information and belief, the defendant Schuman-Tigar Bearing Co., Inc., and the defendant, M. George Tigar, with the intent and purpose of unfairly competing with the complainant and appropriating to themselves the good-will and business which complainant has acquired, and misleading the public, and with the intent of passing off their product as the new and genuine product of the complainant, have obtained from various sources other than the complainant, old and used Timken roller bearings and new Timken roller bearings of obsolete sizes, and have converted the same into more readily salable sizes by first heating the parts of said bearings and thereby withdrawing the temper from the same, then boring out the insides of the cups and cutting down the outer sides of the cones and rollers and afterwards reheating, regrinding and reassembling said cones, cups and rollers.

Similar Stampings Used

Said defendants have also rebuilt and reassembled old and used Timken roller bearings by using the parts of different bearings. After so converting, rebuilding, and reassembling said Timken roller bearings, defendants have stamped said bearings with the same numbers and combinations of numbers and letters used by complainant to designate the different sizes of its bearings and have lubricated, wrapped and boxed said bearings in lubricant, waxed paper and pasteboard cartons exactly similar to the lubricants, cartons and wrappings used by the complainant, and having exactly the same printed matter on the outside of said cartons as that contained on the cartons used by the complainant, and have sold and are now selling and offering for sale, and are inducing dealers to sell and offer for sale, said bearings so converted, altered and assembled by them as new and genuine Timken roller bearings manufactured by this complainant.

It also was charged in the bill that the regrinding and reheating process used by the defendants weakened and withdrew the temper of the original bearings, making them likely to break if subjected to approximately the maximum load and speed under which they are expected to operate, thus damaging the Timken company's reputation.

Also offered in evidence were letters alleged to have been written by the defendants to dealers and distributers offering these reconditioned bearings at 55 per cent off list, implying that these bearings were the genuine Timken product.

Use of Name Discontinued

NEW YORK, Dec. 11.—"We consented to the injunction granted to the Timken Roller Bearing Co.," said M. George Tigar. "We have been salvaging old Timken bearings and selling them as Timkens, but we now have discontinued the use of the name 'Timken.' We still recondition Timken bearings, but we are marketing them under the name 'Tigar.' Mr. Schuman no longer is connected with our organization."

MAYOR CURLEY STARTS BOSTON HIGHWAY PLAN

BOSTON, Dec. 8—That Mayor James M. Curley was not talking for effect when he emphasized the needs of meeting the problems involved by the introduction of the motor vehicle, in an address at the convention of the Motor and Accessory Manufacturers Association in Boston last September, is evidenced by his summoning some of the biggest merchants in the Hub to a luncheon a few days ago when he outlined his project to build a $25,000,000 broad highway across the city.

As a result of the meeting, a bill is being drafted for presentation to the Legislature asking for permission for Boston to borrow money needed for the new thoroughfare. Mayor Curley realized that, unless he could get the big merchants to agree with him, the Legislature never would authorize such a project.

YELLOW'S INVENTORY PERIOD

EAST MOLINE, ILL., Dec. 12—The machine shop of the Yellow Sleeve-Valve Engine Works, Inc., will be closed Dec. 15 to Jan. 2 for annual inventory and for rearrangement of machinery and equipment.

Perrot Arrives Here and Tells of Brakes

While in This Country He Will Assist Work of New South Bend Corporation

NEW YORB, Dec. 12.—Equalizers on four-wheel brakes are neither necessary nor desirable, according to Henri Perrot, designer of Perrot braking systems. Design of front springs is an important element, Perrot says, in determining the effectiveness of front wheel brakes.

A set of brakes which is highly effective on one car may prove ineffective or unsatisfactory on another car of different designs if certain factors, such as spring design and steering layout, are not correlated properly.

A simple form of servo mechanism is desirable because, among other reasons, it enables easier brake application. On account of the limited pedal motion available, it is desirable to limit the number of joints in the brake linkage and to avoid the use of cables for brake operation, thus minimizing lost motion.

Bendix Tenders Him Dinner

These were the high points expressed by the French engineer at a dinner tendered in his honor by Vincent Bendix and attended by representatives of various American automotive publications.

The dinner was also the occasion for announcing further details concerning the formation of the Perrot Brake Corp. of South Bend, Ind., an organization which will exploit four-wheel brakes in this country and will manufacture, under Perrot patents, control elements and possibly the Farman type of servo shoes for sale to the trade.

Vincent Bendix is president of the new corporation. John R. Cautley is vice-president and general manager, while A. Y. Dodge will serve as chief engineer.

Perrot, who landed in New York Saturday, will assist the new organization in developing forms of the Perrot system suitable for application to American cars.

To Visit Automotive Centers

Perrot is leaving New York immediately and will visit the new plant in South Bend, where suitable tool equipment for parts manufacture already is being installed. He will visit Detroit and other automotive centers, return to New York for the show and later go back to Detroit, where he is scheduled to talk at the annual meeting of the S. A. E., Jan. 22 to 25.

Perrot stated that he now has a total of seventy licenses under his patents, one of these being the General Motors Corp. The new company formed by Bendix, it is understood, will handle all other licenses in this country.

Perrot expressed much interest in various methods for brake testing and in securing authoritative data on coefficients of friction on braking materials under various conditions as well as coefficients between tire and road surfaces.

$12,000,000 Earned by Willys-Overland

This Year Tops All Others—Dividends May Be Resumed at Early Date

TOLEOO, Dec. 12—Writing to his stockholders, President John N. Willys states that the net earnings of the Willys-Overland Co. this year have been greater than in any previous year and will exceed $12,000,000. He also says that the reduction in the par value of the common stock will make possible the resumption of dividends at an early date, provided, of course, earnings justify such payment.

For the third quarter the company reports net profits, after all charges, including interest and Federal taxes, of $3,781,256, equivalent to $17.15 a share on the $22,049,500 7 per cent cumulative preferred stock on which there is an aggregate accumulation in dividends of 19¾ per cent, or $4,244,128.

The profits in the third quarter compare with $5,202,918 for the June quarter and $2,729,468 for the first period, bringing the total for the nine months to $11,713,642. This is equivalent to $53.14 a share on the preferred stock, and after allowing for the full preferred dividend accumulation the surplus of $7,469,514 is equal to $3.45 a share on the 2,159,758 shares of common stock outstanding.

The company has set up a reserve of more than $3,000,000 for possible inventory depreciation and other contingencies, but from present indications it is believed that only a small part of this reserve will be actually used.

Estimated output for this year is 200,000, a figure which the company hopes to exceed in 1924.

R. H. Long Interest Say Companies Are Solvent

BOSTON, Dec. 12—Judge Lowell in the Federal district court yesterday took under advisement the question of appointing a receiver for the R. H. Long Co. and the R. H. Long Motors Co. He stated that if the companies were solvent there would be no need of court action. Opinion was pretty well divided between those seeking a receiver and those opposing an appointment.

The question of whether the companies should be adjudicated bankrupt also came in for considerable attention, the Long interests being greatly opposed to disturbing the industries, which they declared to be solvent.

SELDEN BRANCH REORGANIZED

NEW YORK, Dec. 11—Reorganization of the Selden Sales & Service Co., which handles the local distribution of the Selden truck, has been completed with the naming of A. S. More as president and Harry B. Reynolds as vice-president and general manager. More is president also of the parent Selden Truck Corp. at Rochester, N. Y., while Reynolds has recently been the Selden export manager, with offices here. Reynolds will continue to act as export manager in addition to his new duties with the local company.

Judd Heads Association of Brake Lining Makers

NEW YORK, Dec. 13—M. F. Judd of the Raybestos Co. was elected president of the Asbestos Brake Lining Association at its annual meeting here yesterday, succeeding Sumner Simpson, also of the Raybestos company. His associates will be: First vice-president, A. W. Koehler of the Asbestos Textile Co.; second vice-president, R. J. Stokes of the Thermoid Rubber Co., and commissioner, A. A. Mowbray of New York City.

The association decided to continue its support of the national brake inspection movement, a campaign designed to impress upon the motoring public the importance of brake inspection at periodic intervals.

The association also appointed a committee, consisting of J. W. Perry of the Johns-Manville Co., W. E. Fisher of the Russell Manufacturing Co. and N. B. Misell of the Asbestos Textile Co., which will call on Secretary of Commerce Herbert Hoover regarding the work of the United States Bureau of Standards.

Four more manufacturers were admitted to members in the association—the Asbestos Spinning & Weaving Corp., Johns-Manville, Inc., the Multibestos Co. and the Palmer Asbestos & Rubber Corp.

The next meeting of the association will be held Wednesday, Jan. 9.

500 Delegates Expected at Service Convention

NEW YORK, Dec. 13—Plans for the Service Congress to be held in Detroit the latter part of May have progressed to a point where it has been decided to have the exhibit of service equipment open also to the delegates of the World Trade Congress, which will be held the latter part of the same week.

The plans, so far developed, call for convention sessions on Tuesday afternoon, Wednesday afternoon and evening and Thursday afternoon. The remaining mornings and afternoons will be available for visits to the exhibition, where a great variety of service tools and equipment will be shown in actual operation.

It is expected that over 500 delegates will attend the service conventions, which is to be held under the auspices of the National Automobile Chamber of Commerce. Invitations will be extended through various organizations to every individual in the country who is directly interested in service work.

Speakers of prominence in service and allied branches will be secured. So far it has not been decided what building will be used.

Jordan May Declare Big Stock Dividend

Stockholders to Vote on 600 Per Cent Bonus at Meeting to Be Held This Month

CLEVELAND, Dec. 12—Stockholders of the Jordan Motor Car Co. will meet Dec. 22 to decide whether they shall vote themselves a Christmas gift in the form of a 600 per cent stock dividend. In the event the stockholders declare in favor of the bonus, a dividend rate of $3 per share is likely to be established on the new stock at the start.

President Edward S. Jordan, in an official statement, says that if this stock dividend is authorized the capitalization of the company will then consist of 12,000 shares of preferred stock at $100 each and 200,000 shares of no par common stock.

Should the stockholders authorize this increase, it is the intention of the directors to declare a stock dividend of six shares of common stock for each share of common stock outstanding, so that the present holder of one share of Jordan common would be the holder of seven shares of the company's common stock.

Jordan has paid two special dividends of $5 each on 12,000 shares of common stock since July 1. It is understood that earnings for the year ending Jan. 1 will approximate $1,000,000.

Earl Will Not Exhibit at 1924 National Shows

DETROIT, Dec. 11—The Earl Motors Manufacturing Co. will not exhibit at the National shows this season in the absence of determination as to the future course of the concern. The factory is being operated by the banks under a controller who is liquidating the inventories of the company. Production of cars is being carried forward on a limited scale. Servicing of cars in owners' hands is producing considerable business.

Sale of cars that are being built is through dealers in a number of cities, which the company declares it still holds. Liquidation of inventories is expected to be completed within the next few months, at which time it is expected a reorganization will be made and the company reenter actively into the field.

George Scobie, who succeeded Clarence Earl as president, is handling sales in addition to his other work.

BUYS PISTON RING COMPANIES

BATH, N. Y., Dec. 13—The Royal Piston Ring Co. of this city has bought the stock and equipment of the Everyday Piston Ring Co. of East Rochester, N. Y., and also has taken over the United States Piston Ring Co. of Bath. The Royal company will manufacture not only the Everyday leak-proof ring, but also a step-cut ring. U. H. Frey is at the head of the company.

Frame Maker Books Much New Business

Midland Steel Products Reports $1,000,000 in Orders in Ten Days of Month

CLEVELAND, Dec. 12—Orders in excess of $1,000,000 have been placed with the Midland Steel Products Co. of this city in the last ten days, the major portion representing new business. That is the answer the company gives to inquiries on business prospects for 1924.

In the first ten months of 1923, 1,558,395 automobile frames were shipped, as compared with 1,060,000 for the same period in 1922. On June 30, 1923, the ratio between current assets and current liabilities was 3.60 to 1, and on Dec. 1, this had increased to 5.20 to 1. On June 30 the company had bank loans of $300,000, with approximately $700,000 in cash. On Nov. 30 the company had no bank loans and had cash on hand in excess of $1,200,000.

The Midland Steel Products Co. on June 1 of this year took over the Parish & Bingham Co. and the Detroit Pressed Steel Co., with the exception of the latter's wheel division. Company executives state that through the merger a 14 per cent reduction in general administrative and supervision salaries has been effected without impairing efficiency or production.

Manufacturing methods have improved the output per man. The production per man for October was $289 greater than in the month of June, when the company first had charge of operation of the two plants. The October production was practically 93 per cent of the June production, but the total number of men employed in October was only 67 per cent of the total at work in June.

Cleveland Working Force Declined 12.1 Per Cent

CLEVELAND, Dec. 12—Figures compiled by the labor relations committee of the Chamber of Commerce discloses that eighteen factories engaged in the automobile industry in this city reduced their working forces 12.1 per cent during November. This is the largest reduction in any one month of the year.

The 100 manufacturers reporting to the Chamber of Commerce are divided into nine groups, and while all but one—the paper and printing group—reported a reduction in working forces, the reduction in the automotive group was the largest. Automobile men declare that this was because the season affects their products more than it does any other.

854 ELECTRIC TRUCKS SOLD

NEW YORK, Dec. 11—The Society for Electrical Development announces that during the first eleven months of this year 854 electric trucks have been sold. To the central stations of the country this means an off-peak load of approximately 5,200,000 kw. hours annually, which in round figures represents a yearly income of $260,000. In New York City alone 438 electrics were sold during this period as compared with 326 during the corresponding period of 1922—an increase of 34 per cent. In Boston the sale of electric trucks has increased 76 per cent, the association says.

Normal Let-Up in Buying Experienced in Seattle

SEATTLE, Dec. 12—A normal let-up in buying is noted by distributors of both automobiles and trucks. November business was not so good in the Puget Sound region as was October, but it was better than November, 1922.

Japanese emergency purchases made in this district for earthquake relief work are practically finished, and shipments now being made through this port are sold by the factories direct. Trucks for the Washington district are selling much better than a year ago due to the activity of the lumber industry and general good business.

Dealers feel that prospective car purchasers believe that price adjustments have been made and that they will gain nothing by holding off as they did several months ago when reductions in some lines of cars were announced.

Goodyear to Test Rubber Paving Blocks in Akron

AKRON, Dec. 11—Goodyear Tire & Rubber Co. has received permission from the city of Akron to pave a portion of East Market Street, on which the plant is located, with rubber paving blocks as an experiment to test this type of paving material.

The proposed rubber paving will extend completely across the street and will be approximately twenty feet long. A hard surface and a soft surface rubber are to be tested at the same time.

The Akron experiment follows one now being tried in Manchester, England. Successful working of the rubber paving plan will open a large field for the use of reclaimed rubber especially. More than 80 per cent of scrap rubber is wasted and not reclaimed at the present time.

First French Speedway to Be Opened Next Year

PARIS, Dec. 5 (*by mail*)—Not later than May, 1924, the first French automobile speedway will be in operation, declared Paul Bablot, ex-race driver, at the official ceremony which this week marked the beginning of building operations on the Miramas track, which is situated 30 miles from Marseilles, and which, measuring 5 kilometres round, will cost 7,500,000 francs.

The track is an oval with two straightaways 1367 yd. long and 53 ft. wide, united by practically flat turns.

Ford Seeks Million Sales in Half Year

Mark Set for Winter Period Shows Big Increase Over Six Months in 1923

DETROIT, Dec. 11—The Ford Motor Co. has set a mark of 1,000,000 sales for the six months ending March 31 as the goal for its dealer organization to shoot at during the present winter period. In the same six months of 1922 and 1923 the company's dealer organization set up a sales total of 744,883, which represented a 100 per cent gain over the previous year. To reach the million mark this year dealers will have to sell a quarter of a million more cars than last year.

For some years the Ford company has been stimulating winter sales activity among its distributing force by setting up a sales mark over the usual dull period of the year. Last year the mark fixed was the 100 per cent increase, which was achieved. The million mark was set this year as showing a large proportionate gain over last year and one which will give dealers plenty of work, but yet within safe striking distance.

Would Lessen Spring Rush

In pushing sales during the winter the company has the dual motive of keeping sales high during this period and of lessening the heavy spring buying which would result without large winter sales. The combination of a new line throughout, with distinctive closed car models at low prices, is expected to make sales go well beyond the million total. Furthermore, the factory will be able to meet the closed car demand much better than in any other year, so there will be no hitch for this reason.

Enrollments by dealers under the weekly payment plan will not be included in the million total except where payments are completed and deliveries made during this period.

Production in the six months last year was as follows: October, 121,765; November, 121,968; December, 115,629; January, 111,145; February, 122,994; March, 151,382.

Eucalyptus Oil as Fuel Approved in Australia

WASHINGTON, Dec. 12 — Refined eucalyptus oil as a gasoline substitute has been found practicable by fuel experts of the Australian government, according to a report received by the United States Bureau of Foreign and Domestic Commerce. The report states that with eucalyptus oil the engine must first be heated before it will operate.

It is claimed that there is no carbon deposit when a mixture of this oil with gasoline, benzol or alcohol is used. Tests show that 25 lb. of oil can be obtained from 1000 lb. of eucalyptus leaves.

G.M.C. Exports Half Its Canadian Output

So Far This Year Corporation Has Produced 50,000 Cars in Oshawa Plant

NEW YORK, Dec. 10—Stockholders of the General Motors Corp. have been informed by the big organization that 50,000 cars have been manufactured this year in the Oshawa plant of the General Motors of Canada, of which 27,000, or 55 per cent, have been exported to sixty-four countries overseas.

This compares with 37,260 in 1922, of which 22,000, or 59 per cent, were exported. In 1921 production was 15,390, 27 per cent being exported; and in 1920 the count was 22,362. Of the 1923 output 35 per cent were closed cars.

In the way of information for the stockholders, General Motors also announces that there are nearly 1000 stockholders residing in Canada who own a total of 485,000 shares of General Motors Corp. stock, and that more than 935,000 shares are owned by residents of Great Britain, so that in the Dominion of Canada and Great Britain there are held 1,420,000 shares of stock in the parent organization.

Became G. M. Unit in 1918

General Motors of Canada became a unit of the General Motors Corp. in 1918, when the McLaughlin interests were taken over, the McLaughlins remaining in the organization as executives. Following the year of its inception General Motors of Canada launched out on a policy of expansion, making plant expansions at Oshawa to accommodate the more extensive manufacture of Buick, McLaughlin-Buick, Chevrolet, Oldsmobile and Oakland. Later GMC truck and Cadillac were added.

As the organization stands now, General Motors of Canada is the manufacturer, while its subsidiary selling organizations include Cadillac Motor Car Co. of Canada, Chevrolet Motor Co. of Canada, McLaughlin Motor Car Co., Oakland Motor Car Co. of Canada, Olds Motor Works of Canada and General Motors Truck Co. of Canada. From Oshawa they distribute and service for General Motors of Canada.

Since 1921 the Canadian company has been manufacturing for the overseas market in order to supplement the General Motors factories in the United States and to provide the General Motors Export Co. with an additional source of supply for its rapidly expanding overseas business which it handles from seventeen zone offices at important distributing centers.

G. M. TRUCK EXTENDS BRANCHES

DETROIT, Dec. 12—During the present year General Motors Truck Co. has established seven new branches, located at Denver, Pontiac, Minneapolis, Spokane, Seattle, Milwaukee and Birmingham, Ala. There has also been an extensive widening of its distribution field, and the company's sales organization is declared practically complete for nation-wide operation in 1924.

M. A. M. A. DIRECTORS APPROVE MELLON PLAN

NEW YORK, Dec. 11—Directors of the Motor and Accessory Manufacturers Association have emphatically i n d o r s e d Secretary Mellon's program for tax reduction through the adoption of the following resolution:

Resolved, that we heartily approve the plan for reducing Federal income taxes recommended by the Secretary of the Treasury in his letter of Nov. 10 to Congressman Green. We believe that if made effective, this plan will be of very material benefit to the whole people of our country,

First, by more equitably distributing the tax burden, relieving the wage earner of his disproportionate share of the load;

Second, by demonstrating the policy of good government through providing for reasonable budget requirements by an intelligent, logical and fair method of apportionment;

Third, by stimulating industry through the release to industry of funds now invested in tax exempt securities, thereby materially increasing our national prosperity.

Ford Builds First Car in New Canadian Plant

DETROIT, Dec. 7—The new plant of the Ford Motor Co. of Canada, Ltd., will be in complete operation by the first of the year, giving double production facilities, with capacity for 500 completed cars and trucks daily. The first car built on the assembly line in the new plant was a new type coupé carrying engine No. 451,306, leaving the line at 10.30 a.m. Dec. 3.

By the first of the year the former plant will have been dismantled of all machinery and will be converted into a body-building plant, where the company will take care of all its requirements. Cost of constructing and equipping the new plant represents an outlay of $10,000,000, and its facilities generally are expected to meet all expansion needs for many years. In addition to its Canadian business, the plant supplies all British colonial possessions and the Dutch East Indies.

The first car by the Canadian company was built in 1909, in which year the company's output was 548. In the first eleven months of this year the company built 74,315 cars and trucks. Every month this year has surpassed best records for corresponding months in any year.

Congress Again Gets Shoals Sale Proposal

Congressman Madden Introduces Bill for Disposal of Plant to Ford

WASHINGTON, Dec. 12—The sale of Muscle Shoals to Henry Ford is provided for in a bill introduced in Congress by Representative Martin B. Madden of Illinois, and providing also for the construction of a replica of the Gorgas power plant, which was sold to the Alabama Power Co.

The bill conforms to the proposal made by Ford to the last Congress on May 31, 1922, for the purchase of the site, and if passed would authorize the sale of the site to Ford practically at his own terms, with certain stipulations as to the manufacture of nitrates.

The measure empowers the secretary of war to sell outright nitrate plants Nos. 1 and 2 and the Waco quarry for the sum of $5,000,000, payable $1,000,000 on acceptance of the offer and $1,000,000 each year until paid at 5 per cent interest.

100-Year Lease Provided

Ford would be given a 100-year lease on Dam No. 2 at an annual rental of 4 per cent of its cost with $35,000 annually for repairs, and a similar lease on Dam No. 2 at a rental of 4 per cent of its cost, with $20,000 annual allowance for repairs.

It is proposed that Ford form a corporation with $10,000,000 stock or more, to be controlled by him, and that this corporation build a new 40,000 hp. plant, similar to the Gorgas plant, at Government expense but designed by Ford.

It is specifically stated in the bill that Ford must manufacture at the site at least 40,000 tons of nitrogen annually, to be sold at a profit not exceeding 8 per cent of the actual annual cost.

A board of nine members, three of whom are to represent the American Farm Bureau Federation, the National Grange, and the Farmers' Educational and Cooperative Union of America, is to be named to see that the American farmer and fertilizer user is supplied with this 40,000 tons of fertilizer "at a fair price and without excessive profits on the part of Ford."

After the expiration of 100 years on the leases Ford or his successors are to have first chance to buy the property.

Bill Also in Senate

The bill has been referred to the Committee on Military Affairs of the House.

The sale of the Muscle Shoals project was also brought up in the Senate, when Senator Kenneth McKellar of Tennessee introduced a joint resolution authorizing "that the offer of Henry Ford for the lease and purchase of the Government plants at Muscle Shoals, heretofore sent to the Senate by the Secretary of War, be accepted."

Buses and Trolleys Uniting on Policies

Rail Interests, Accepting Invitation, Meet with N. A. C. C. Representatives

NEW YORK, Dec. 10—The speech that Alfred Reeves made at the annual meeting of the trolley interests at Atlantic City last October, when he extended an invitation to the American Electric Railway Association to cooperate with the National Automobile Chamber of Commerce in legislative and taxation matters, has brought about the desired results.

The invitation has been accepted, the A. E. R. A. has appointed a committee to confer with the N. A. C. C., a meeting of both sides has been held, and the joint interests now are prepared to map out a policy on legislation, taxation and public utility commissions that will be beneficial to both the bus and the trolleys.

Trolley Representatives

The first meeting was held at N. A. C. C. headquarters, the trolley association being represented by L. F. Storrs, president of the Connecticut Co., as chairman; Arthur Brady, president of the Union Traction Co. of Indiana; C. D. Emmons, president of the United Railways & Electric Co. of Baltimore; M. D. Lambert, manager of the railway department of the Westinghouse Electric & Manufacturing Co.; R. T. Stevens, president of the Republic Railway & Light Co. of New York, and John W. Colton, editor of *Aera*.

The Truck committee of the N. A. C. C. represented the automobile industry. In the absence of Chairman Windsor T. White, A. J. Brosseau presided over the joint meeting, while his fellow committeemen were David S. Ludlum, E. A. Williams, David C. Fenner, O. H. Browning, Alfred Reeves, Harry Meixell, E. F. Loomis, I. W. Schmidt, while Col. Charles Clifton, president of the chamber, also attended the meeting.

Admit Trend Toward Bus

The trolley representatives were frank in admitting that in the last two years there has been almost a complete reversal of opinion in their ranks as to the utility of the motor bus. Whereas at the first of the year there were about 300 buses operated by trolley companies, now there are more than 1000, and the popularity of the bus is growing daily. The trolley interests realize that the bus is here to stay, but, on the other hand, they say that the trolley never will be knocked out—that it always will be needed for mass transportation and speedy travel.

Bus makers, it was pointed out, must remember that while the trolley companies look with favor on the bus, yet there are times when it is impossible because of franchises to give up trolleys and install buses. Also lack of money to change equipment has an important bearing on the matter.

This joint meeting agreed on the necessity of framing a platform of cooperation that would work to the interests of all, and with this end in view a special committee was appointed to map out this policy. A. J. Brosseau is chairman of this committee, and his N. A. C. C. associates are Windsor T. White and A. H. Swayne. L. F. Storrs, Arthur Brady and R. T. Stevens represent the A. E. R. A.

A meeting of this special committee will be held in the near future, following which there will be an announcement as to the views of the two organizations on questions of common interest.

COSTS 7 CENTS MILE TO RUN AUTOMOBILE

WASHINGTON, Dec. 12—The question of what is the cost for the operation of an automobile on a mileage basis has been partially answered by the Government.

In preparation of the annual budget for 1925 Government experts have figured original cost, depreciation, gasoline, tires, etc., and have declared that the cost per mile for automobiles is 7 cents and for motorcycles 3 cents.

Allowance, however, is made for certain conditions, such as mountainous regions, swamps and poor roads, and while the figure may be high in some localities and low in others, the Government experts figure that the 7-cent cost per mile basis is adequate and fair, and it has been accepted by the Budget Committee in figuring estimates.

The calculations are based on what is characterized as a moderately priced automobile, being neither the lowest priced nor the most expensive make.

Cash Prizes to Be Given in European Grand Prix

PARIS, Dec. 3 (*by mail*)—Cash prizes to a total of 230,000 francs will be offered in connection with the European Grand Prix race for 122 cu. in. cars, the date of which has been fixed for Sunday, Aug. 3, at Lyons. This is the first occasion on which the Automobile Club of France has offered a money prize for any event it has organized, for until quite recently it was strongly opposed to races being run for anything but the glory attached to them.

It is understood that the winner of the Grand Prix 122 cu. in. race will receive 100,000 francs cash; the second man home will receive 25,000 francs, and the third, 10,000 francs. The winner in each of the three classes for the Touring Grand Prix will receive 10,000 francs cash, and the second 5000 francs.

State Officials Ask Millions for Roads

Want Congress to Appropriate $100,000,000 to Cover Years 1925, 1926 and 1927

WASHINGTON, Dec. 11—A resolution calling for the appropriation by Congress of $100,000,000, to be spent annually in 1925, 1926 and 1927 for Federal aid in road construction, was unanimously adopted at the annual meeting of the American Association of State Highway Officials, held at New Orleans last week. No attempt will be made to obtain an increase over the $75,000,000 already appropriated for 1924.

The statement by President Coolidge in his first message to Congress that no expenditure of the Government does more to create national wealth than that which is devoted to highways was received with enthusiasm by the convention. It is expected to have much influence on Congress.

Supports Road Congress

The association also adopted a resolution pledging its heartiest support to the interests which are arranging Pan-American and English-speaking road congresses to be held in this country within the next few months. Everything possible will be done to make successful the intensive course in highway construction which will be given the delegates from Latin-American countries.

Thomas H. MacDonald, chief of the Bureau of Public Roads, reported to the convention the agreement which had been reached on the fundamental principles of highway financing by representatives of his bureau, the N. A. C. C., the Investment Bankers Association and the Association of Highway Officials. No action was taken on this question, but it was evident from the discussion that the members are thoroughly in accord with the agreement reached.

The attention of the association, which naturally has been centered chiefly upon the construction of good roads, is turning rapidly to the broader phases of highway transport and transportation as a whole.

This was evidenced by the fact that the motor transport committee has decided to undertake the compilation of a uniform motor vehicle regulatory law.

Would Amend Highway Act

WASHINGTON, Dec. 11—Representatives in Congress from eleven western States held an informal conference here today, at which they considered the advisability of recommending an amendment to the Federal aid highway act which would permit the expenditure of the entire Federal aid appropriation for any State upon the construction of an improved road, which would traverse the entire State to connect with other State roads and thus provide more continuous highway transport routes.

Men of the Industry and What They Are Doing

McCann Assistant to Kettering

G. B. McCann has been appointed personal assistant to C. F. Kettering, president of the General Motors Research Co. McCann formerly was treasurer of the Dayton Engineering Laboratories Co., having been with that company since its organization. For this reason he has been closely associated with Kettering for many years.

Westcott Honored in Ohio

Burton J. Westcott, president of the Westcott Motor Car Co., has been appointed a member of the board of directors of the Ohio Board of Commerce. Westcott was formerly mayor of Springfield, Ohio, and is treasurer of the American Seeding Machine Co.

Leonard Joins Overland

H. J. Leonard has resigned as vice-president of the Stephens Motor Car Co., in charge of production, to join Willys-Overland, Inc., of Toledo, in an executive capacity. He expects to assume his new position about Jan. 14. His successor at Stephens has not been announced.

New R & V Directors

George L. Walker, master mechanic and assistant secretary-treasurer of the R & V Motor Co., was added to the board of directors of the company at a meeting in St. Louis of the executive board which settled St. Louis bank loans. E. Frantcher, general auditor, was made secretary-treasurer, succeeding Lawrence Bogher, resigned. Frantcher with W. J. Boone, manager of the Chicago branch of the company, was also added to the directorate.

Rost Assists Climax Manager

N. G. Rost, formerly affiliated with the Duesenberg engine builder in a high executive position, now is assistant to the general manager of the Climax Engineering Co. of Clinton, Iowa, which manufactures Climax engines for industrial work.

Schuster in Publishing Business

M. Lincoln Schuster has resigned his various connections with the Motor and Accessory Manufacturers' Association to become president of the firm of Simon & Schuster, publishers, with offices at 37 West Fifty-seventh Street, New York City. His associate, Richard L. Simon, now is an executive of Boni & Liveright, New York publishers. In the four years Schuster has been identified with the M. A. M. A. he has been most active in an executive capacity as assistant to the general manager, M. L. Heminway, manager of the Educational Department, secretary of the Advertising Managers' Council and secretary of the Foreign Trade Committee. Arrangements have been made whereby he will continue to handle certain features of the Educational Department work as counsel and adviser and will represent the association in its contact with the press.

Ford Sends Nagel to Belgium

Arthur C. Nagel, assistant manager of the Ford Motor Co.'s plant in Buffalo, has been promoted to the management of the company's business in Belgium, Switzerland, Holland and occupied Germany. His headquarters will be in Antwerp, Belgium. Nagel states that Ford already has four buildings in Antwerp, and that soon after the beginning of the new year it will start construction of a large building in which will be combined the business now done in the four and which will permit considerable expansion. He added that the company expects to market 50,000 cars through its Antwerp branch in the coming year. Nagel will sail on the Majestic on Dec. 15.

F. S. Whitman Resigns

F. S. Whitman, president and director of the Belvidere, Ill., Screw & Machine Co., has resigned from active association with the concern because of his health. He was head of the company through its refinancing last spring and has started it on a firm footing. The board has not taken action to fill the vacancy.

Wilson Associated with Harper

E. B. Wilson, who resigned as Detroit retail branch manager of Studebaker on Nov. 1, has taken an interest in the Studebaker Sales Co. of Philadelphia. He will be associated with Harry B. Harper, former general sales manager of Studebaker, who recently purchased the Philadelphia distributor's business.

Wilson is one of the old National Cash Register Co. school. While at Dayton he worked with many men now prominent in the automotive industry, including Alvan Macauley, president of Packard; E. S. Jordan, president of Jordan; Hugh Chalmers, Joseph Fields and the late Harry Ford.

He has been associated with Harry B. Harper for several years in automotive work. He was a member of the Willys-Overland staff when Harper was general sales manager.

Brozek on Australian Visit

Joseph H. Brozek, representative of Eco Motors Co., Ltd., of Australia, has left for a visit to the home office of his company and will not return to Detroit until March.

Beal with Studebaker

Daniel M. Beal, Moline, Ill., former sales manager for R & V Motor Co., has been appointed division manager for the Studebaker Corp., South Bend, Ind.

Deutsch Heads Moon in Michigan

Sim Deutsch will head the company which will act as distributer for the Moon Motor Car Co. in Michigan. Offices will be maintained in Detroit, from which sales will be directed, the company not engaging in the retail branch of the business. Cars will be shipped from the St. Louis factory to storage points in the State, from which they will be released to dealers. Deutsch at one time served as vice-president and general manager of the Signal Truck Corp. Recently he acted as vice-president and general manager of the Detroit Auto Dash Co.

Frank B. Amos Returns from Long Foreign Trip

DETROIT, Dec. 10—Completing an eight months' trip in which he circled the globe, Frank B. Amos, manager of foreign advertising and sales promotion for Dodge Brothers, has returned to Detroit.

During his travels, Amos visited Hawaii, Japan, China, Korea, Philippine Islands, Indo-China, the Straits Settlements and the Malay States, India, Egypt, Italy, France and England. In most of these countries he found an increasing use of automotive vehicles, particularly for bus and utility transportation purposes. Throughout the East only two lines of passenger cars are being strongly merchandised, he said, although there are a few other lines which stand out prominently in sections where able dealer representation has been obtained.

In all, however, not more than five or six makes of cars are being actively pushed. The problem of sales in these territories, Amos believes, is largely one of obtaining the proper dealer connections. In support of this belief, he cited several instances in which dealers are making volume sales in districts where the general economic conditions seriously limit the sales possibilities.

The export business should continue to enlarge throughout the Orient, Amos believes.

Chandler Plans for 1924 Call for 22,500 Output

CLEVELAND, Dec. 11—The production schedule of the Chandler Motor Car Co. for 1924 will call for an output of between 22,500 and 25,000 cars, of which 10,000 will be turned out in the first quarter. This compares with 16,000 cars produced in eleven months of the present year.

The heavy production in the first quarter is the result of the experience in the spring of the present year, when the company was unable to keep up with the demand.

Program Is Outlined for S.A.E. Meeting

Many Major Papers Are Announced for Annual Event to Be Held in January

NEW YORK, Dec. 12—Body design and construction, brake problems, aeronautics, fuel economy, bus transportation and production methods are among the chief topics which will be discussed at the annual meeting of the Society of Automotive Engineers, to be held in Detroit Jan. 22 to 25. The entire program has not yet been decided upon, but many of the major papers have already been scheduled.

Henri Perrot, French brake engineer, will outline his experiences in brake design, telling of early failures and their cause as well as of ultimate successes. Other papers on this subject will include a discussion of recent investigations at the Bureau of Standards by W. S. James and a description of a brake equalizer by George L. Smith.

Purdue Engineers to Speak

Four or five engineers will talk on various phases of fuel and engine problems. G. A. Young and J. H. Holloway of Purdue University will discuss methods of controlling detonation under high compression, while another Purdue research engineer, C. S. Kegerreis, will have a paper on carbureter efficiency.

Thomas Midgley, Jr., will tell about the latest developments in doped fuels, and J. A. C. Warner, assistant manager of the S. A. E. research department, and Roger Birdsell of the Bureau of Standards will outline the results of the cooperative research work which is being carried on by these two organizations.

C. E. Sargent will describe a new constant compression engine. R. L. Skinner will talk on crankcase dilution and the design theory behind the Swan manifold will be explained by A. M. Dean. N. S. Diamont will read a paper on radiator design.

Among the papers in the body session will be one on nickel plating by Prof. Edwin Bohn of Michigan University and another by H. T. Strong on trimming styles.

A paper on casein glue and round table discussion on the effects of drying oven temperatures will be other features of the body sessions. A representative of the Forest Products Laboratory will talk about body lumber standards and waste.

To Speak on Bus Operation

R. W. Meade, prominent bus executive, will discuss "Motor Bus Operation" at the transportation session. At the same session, R. C. Wright, general traffic manager of the Pennsylvania Railroad system, will comment on the recent transportation report of the sub-committee of the Chamber of Commerce of the United States.

A number of specially interesting papers are scheduled for the aeronautic session. Star Truscott will describe engineering problems of the ZR-1, and George V. Mead of the Wright Aeronautical Corp. will talk on "Engine Design for Reliability."

At the production session T. B. Fordham, Delco Light Co., will outline certain phases of production control, and Gordon LeFebvre, Chevrolet Motor Car Co., will read a paper on "Process and Equipment for Fender Enameling." Col. C. L'h Ruggles will outline recent advances in ordnance design.

The S. A. E. Carnival will be revived this year at the Detroit meeting. It will be held on the evening of Jan. 23 at Oriole Terrace.

The annual dinner will be held in New York during show week as usual. Dr. M. L. Burton, president of Michigan University, will be one of the chief speakers, and his topic will be "That Mind of Yours."

NEW YORK HOLDING PRE-SHOW MEETINGS

NEW YORK, Dec. 12—Several New York factory branch distributing organizations have begun to hold meetings in preparation for the New York show. Some are bringing dealers of the territory together for talks on the 1924 models and to impart sales information. Others are holding salesmen's meetings to prepare for intensive interviewing and canvass work during and after the show.

Typical of the meetings being held are those arranged by the Hunt Motor Car Co., Rickenbacker distributor. One series of meetings is for salesmen and another for dealers and sales managers. More than fifty of the latter met last week when sales plans were explained and talks were made by William Lawson, general manager, and J. Kleckner, retail sales manager, and Neal G. Adair, editor of Motor World.

Congress Gets 3 Bills for Excise Tax Repeal

(*Continued from page* 1222)

not a luxury, in the sense that diamonds, silks and art are luxuries. The United States, with the industry centering in Detroit, leads the world in automobile production and should not be hampered in competition with foreign countries. The automobile industry is now paying more than twice its share of the tax for maintaining good roads, and the taxes are not defensible on these grounds.

Figures for the fiscal year ending June 30 last were cited by Clancy. Truck purchasers last year paid $10,678,761, passenger automobiles and motorcycle purchasers paid $92,736,580, while the total excise tax on tires, repair parts, etc., was $40,875,148, he told the House.

G. M. Favors Mellon Tax Reduction Plan

Sends Letters to Stockholders and Employees for Their Indorsement of It

NEW YORK, Dec. 11—Over the signature of John J. Raskob, chairman of its finance committee, the General Motors Corp. has sent a letter to each of its stockholders and employees dealing with the Mellon plan of tax reduction.

Each is asked, if he favors such tax reduction, to sign a letter that is inclosed, urging Congress to "take an aggressive and persistent stand for lower Federal taxes and to support a tax reduction plan substantially along the lines" advocated by the Secretary of the Treasury and "to refrain from voting in favor of any legislation which will interfere with the carrying out of such tax reduction program." These letters will be sent to Congress by General Motors.

Declaring that General Motors officers believe there must be substantial reductions in Federal taxes in order to place the business of the country on a sound economic basis, Raskob says:

Effect on Industry

Failure on the part of the industry to secure capital means contraction instead of expansion in our industries, and this in turn means high production costs, low consumption and greater danger of unemployment. On the other hand, substantial reductions in surtax rates will release capital for industrial expansion, and this should supply employment, reduce production costs and result in our ability to better develop American industry in competition with the world.

Also, the Treasury Department states that in all probability the revenue from the reduced surtax rates will soon equal or exceed what would accrue at the present rate, because of the encouragement which the changes will give to productive business.

The interests of our stockholders and employees in this matter are identical. The problem is in no sense a partisan one. It is purely economic and the economic cycle may be illustrated thus: If capital can be secured for industrial expansion, this means increased production; production means employment; employment means wages; wages mean greater consumption; consumption means production, and so we go around this economic cycle again and again, enjoying real prosperity.

As soon, however, as any unsound economic condition or legislation is thrown into this cycle, the tendency is to impede progress and induce failures and receiverships, with consequent unemployment and bad times.

PACKARD AT CAPACITY

DETROIT, Dec. 10—Announcement is made by the Packard Motor Car Co. that it is operating at capacity at the present time, the schedule calling for a monthly production of 600 single-eights and 1300 single-sixes. A greater percentage of closed bodies is being produced now than at any time in the company's history.

Fabric Inventories Reach New Low Point

Cord Also Reduced in October—Production of Both Types Increased

NEW YORK, Dec. 10—Fabric tire inventories reached a new low point in October and cord inventories were reduced materially, while production and shipments of both types increased, according to the statistical bulletin issued today by the Rubber Association of America.

Standing at 1,434,291, fabric inventories are lower than at any time since September, 1921, when the compilation of statistics was begun. Fabric shipments have held steady for several months, but the inventory drop has been constant since June. Fabric production on the other hand, after dropping sharply from May to July, recorded a gain for August and October.

Shipments Slightly in Excess

At no previous time have inventories for any type of tire been nearly as low as the current month's production or shipments. The October figures show, however, that the stock of fabrics on hand was only 157,316 in excess of shipments.

The statistics for cords indicate no marked change in trend for the month. The gradual inventory decline, which began in June, has been continued, while gains have been made in both shipments and production, the former having been the greater.

Inner tube inventories went up slightly in October. This movement was accompanied by a corresponding fall in shipments and rise in production.

Production of solid tires remained at low levels for the month, although shipments held steady and inventories went down slightly.

It is interesting to note that export shipments of fabric types dropped off 25.7 per cent, despite the fact that cord exports went ahead 7.9 per cent over September. Decreases in October exports are shown also for solids and inner tubes.

The Rubber Association figures do not include those of one of the larger makers, whose production might affect materially the fabric statistics.

Report for Third Quarter

NEW YORK, Dec. 11—The report of the Rubber Association of America for the third quarter on the volume of business done and the consumption of crude rubber shows a marked falling-off in the value of automobile products in comparison with the first and second quarters.

The total sales value of tires and tire sundries for the third quarter was $130,562,000, as compared with $132,818,000 in the second quarter and $156,908,000 in the first quarter. The big crop came in the sales value of passenger car and truck tires, which fell from $112,515,000 in the second quarter to $100,707,000. Inner tubes, however, increased from $17,214,000 to $19,263,000.

Motorcycle casings and tubes went up from $345,000 to $349,000; bicycle tires dropped from $1,301,000 to $819,000; "all other pneumatic casings and tubes not otherwise specified" increased from $5,000 to $67,000; solid truck tire values fell from $8,237,000 to $5,867,000; all other solid tires advanced from $208,000 to $249,000, while tire sundries and repair materials jumped from $2,903,000 to $3,241,000.

This condition is not unseasonal, though, for figures for 1922 show that whereas the first half of 1923 exceeded the volume for the corresponding period in 1922 by $6,992,000, it will be necessary only for the fourth quarter of this year to produce a volume of $108,897,000 to equal the figures for the last half of last year.

Consumption of crude rubber in this year's third quarter was 38,428 long tons in comparison with 65,253 in the second quarter and 72,303 in the first.

An inventory of crude rubber in the United States and afloat on Sept. 30 shows 85,658 long tons on hand and 24,808 afloat.

Standards Bureau Plans New Work for Industry

WASHINGTON, Dec. 12—New work, which will mean much to the automotive industry, is to be undertaken by the United States Bureau of Standards, beginning July 1 of next year, provided Congress will supply the money.

A sum of $15,000 is asked of Congress, and the application has been approved by the Budget Committee, for research work in the performance of automotive power plants. The bureau proposes to install a special unit to study the basic principles underlying the design, performance, operation and testing of automobile and airplane engines and power transmitting systems used in them.

It will also develop constructive research into the question of brakes and brake linings and seek especially to promote economy in the use of liquid fuels and safety in vehicular traffic.

It is proposed that this shall be a separate bureau in the Bureau of Standards and one not heretofore provided for by legislative enactment.

Girl in Kentucky Wins Firestone Essay Prize

WASHINGTON, Dec. 10—The Highway Education Board announces that Miss Dorothy Louise Roberts of Harlan, Ky., living in the heart of the Kentucky mountains, is the winner of the H. S. Firestone Four Years' University Scholarship, offered for the best essay entered in the fourth annual good roads essay contest.

More than 150,000 high school students from all sections of the country submitted essays in this contest.

Tire Trade to Face Most Trying Period

Is Result of Action of Manufacturers in Dropping Consumer Price Lists

AKRON, Dec. 12—Automobile tire dealers will face the most trying period of their history next year as the result of the dropping of consumer price lists by manufacturers.

The period of price cutting and cut throat competition on the part of some of the makers has left many dealers discouraged and ready to give up their tire business; but this situation is as nothing compared with conditions when every dealer will set his own price and be able to cut at his own sweet will against his nearest competitor.

The large rubber companies and other agencies are making efforts to instruct the dealers on how much to add to cost prices to make a profitable showing and otherwise educating the dealers to do business, but this seems to be only a scratching of the surface as compared with what will have to be done to meet the new conditions.

Since the origin of the business, tire companies have protected the dealers so that a profit would be assured if business was conducted on reasonable lines. In spite of this, however, the mortality rate among dealers has been exceedingly large.

Now the dealers are to face the future with every phase of their business in their own hands. They are to fix their own retail price and figure their profit margin.

Roads Bureau Wishes Research Department

WASHINGTON, Dec. 12—Road building and highway construction in the United States will be placed on a more permanent basis if the proposal of the United States Bureau of Public Roads for the establishment of a special bureau for research is adopted by Congress.

Estimates submitted this week in the budget ask for $73,700 for the bureau to be used in investigating the best methods of road making and the result of automotive traffic on roads and the use of local materials in road construction. A total of $481,875 is asked by the Department of Agriculture for the use of the Bureau of Public Roads.

HYDRO-UNITED INDICTMENT

PHILADELPHIA, Dec. 8—Five officers of the Hydro-United Tire Co., Pottstown, Pa., were indicted here yesterday, accused of having "jockeyed" the stock of the concern and engaged in a million-dollar mail enterprise of fraudulent nature. The men indicted are: Jacob G. Feist, John H. Phillips, Augustus Anderson, Philip I. Schaefer and Sidney Linderman.

1924 American Cars Reach South Africa

Others of the New Models Are on Their Way—English Makes Arriving

JOHANNESBURG, SOUTH AFRICA, Oct. 30 (*by mail*)—The first of the new series Buick cars has arrived in South Africa and is to be shown to the public in the showrooms of the various dealers throughout the country on Nov. 1—just two months after it made its début in Flint. Advertising of the query type is being carried out, and the newspapers display keen interest in the guessing competition.

It is certain that the new Buick will prove popular in this country, for the last model immediately became a favorite and won many adherents to the car. Arthur Williams, General Motors representative in South Africa, has left Johannesburg for Cape Town, where he will take delivery of a 1924 six cylinder phaeton model Buick and drive it over 2500 miles of representative colonial roads. This trip is being written up in the press, and his progress will be followed with great interest.

Oakland Models Arrive

The Oakland models for 1924 are also about to arrive, and some big advertising campaigns will be undertaken to introduce them. The new Chevrolet is here, and the Cadillac is on its way.

The 1924 Studebaker models have been seen in Johannesburg and have created a favorable impression. The Dodge Brothers has been announced and should arrive almost any day. This car with its body changes will doubtless create considerable interest. The new Hupmobile is also on its way and should prove among the most interesting of the new types.

New English models have not been announced, although several that have not been seen here for some time are now coming in. A new Continental car is the Ansaldo—a little sporting job that has created a very good impression. Fiat and Steyr continue to sell in limited quantities, and these appear to be the most popular of the European makes. It is thought that the latest Morris Oxford and Morris Cowley will be brought here soon in view of the new price reductions announced in England.

Gain by British Cycles

British motorcycles continue to gain ground, and a very large number, in comparison to the population, are being sold just at present. People seem to like the lightweight machines better than the big twins and the side-car combinations. The reduction in car prices during the last few months, together with a fall in the price of fuel, seems to have had a great deal to do with this.

The trend toward the British lightweight doubtless will continue, as the small machines have highly efficient engines and can put up nearly as much speed as motorcycles with almost double the capacity. American motorcycles such as the Indian and Harley-Davidson are holding their own and are liked for side-car and specially fast solo work.

Interesting developments regarding the merchandising of Ford cars in South Africa are anticipated. It is announced that a Ford assembly plant is to be built at Port Elizabeth and that the present representatives will be offered only limited territory on an agency basis. Extensive plans for Ford service stations are said to be in course of preparation.

The Studebaker factory has also decided to do away with the South African representative and deal with agents direct. Most of the old agents remain, however, on practically the same footing as before.

Pushing Good Roads

The Transvaal Roads League—the body formed to push propaganda for good roads—has sent a questionnaire to candidates for the municipal and provincial elections that take place at the end of this year, asking them their views on the subject of good roads. The need for good roads is now generally recognized, and other leagues are being formed in the Cape Colony, Natal and the Orange Free State.

The primitive methods of road making are still in vogue here. The track that was good enough for ox-wagon travel fifty years ago is considered to be quite all right for the modern car. Only in the more progressive districts are highways being constructed scientifically and to the best advantage considering the material available. Concrete roads are to be tried out soon in various parts of the country, it is understood, and the first section to be put down is to be between Johannesburg and Pretoria. In any case this road is to be remade, even if the concrete idea is not carried out.

Trade Bodies Disturbed by National Tile Decree

WASHINGTON, Dec. 11—Representatives of trade associations are betraying considerable concern over some of the stipulations in the consent decree in the case of the National Tile Manufacturers' Association, which was charged by the Department of Justice with violation of certain provisions of the Sherman law.

This decree would make it permissible for trade associations to gather statistics of production and distribution only at the request of some Governmental agency. If it is rigidly construed, it is likely to affect practically all trade associations doing statistical work.

It is known that the Department of Commerce, which has made a serious effort under the direction of Secretary Hoover to assemble fundamental data of value to all industry, views the decree and its possible effects with considerable apprehension.

Government Gathers Rubber Supply Data

Said That New Sources of Crude Have Been Located as Result of Survey

AKRON, Dec. 10—Firestone Tire & Rubber Co. crude rubber experts and possibly authorities from other rubber companies will go to Washington next month to assist in checking material gathered by the Department of Commerce regarding new sources of crude rubber.

The Department has gathered a large mass of data, much of which indicates, according to Firestone officials, that crude rubber will be obtained from new sources in the very near future, and efforts will be made to put this mass of material into shape for a report to the new Congress.

The survey was made after Great Britain inaugurated restrictions on export of crude rubber a year ago through the operation of which, it was believed, that the price of crude rubber would go to new heights.

The operation of the restriction law did not increase the price of crude rubber, and consequently tires as expected, but it succeeded in having American makers attempt, through the Government, to find new sources to make America independent of foreign crude rubber sources.

Harvey S. Firestone, president of the Firestone company, was the leading exponent of the plan to find American sources of rubber, and since the investigation started has maintained an office in Washington to watch and assist in the survey.

Survey Halts Price Rise

WASHINGTON, Dec. 10—Notice given by the American Government of its intention to investigate the crude rubber supply situation has stemmed the tide of advancing prices, according to the annual report of Secretary of Commerce Hoover.

In discussing the situation, Secretary Hoover cites the increase in price of crude during the last eighteen months up to the time when this Government notified British authorities of its objection to the Stevenson restriction act.

Four Airplane Operators in Britain to Be Merged

NEW YORK, Dec. 10—A copyright cablegram from London to the New York Times announced the formation in Great Britain of a national air transport corporation, in which four companies now running airplane lines with the aid of a government subsidy will be merged.

The capital is to be £1,000,000 with an immediate issue of £500,000, guaranteed by the British Foreign and Colonial Co., Ltd. A contract has been signed by the British Treasury as guarantor. Sir Eric Geddes, head of the Dunlop tire interests, is to be chairman.

FINANCIAL NOTES

Fisher Body Corp. and subsidiaries, including the Ohio company, showed a net income for the third quarter of $5,237,912, after charges and Federal taxes, equivalent to $8.73 a share earned on 600,000 outstanding shares of no par common. This compared with $4,777,682 or $7.96 a share in the preceding quarter. Net income for the six months ended Oct. 31 was $10,015,594 or $16.69 on the common. The net income for the Fisher Body Ohio Co. for the quarter just ended was $850,380 as compared with $1,081,288 in the preceding quarter.

Mack Trucks, Inc., has declared the regular quarterly dividend of $1.50 on common and 1¾ per cent on first and second preferred, all dividends being payable Jan. 2 to holders of stock of record Dec. 20. The company reports net profits of $5,870,246 for the nine months ended Sept. 30, or $17.72 a share on the common. It estimates that net earnings for the full year will approximate $7,200,000.

Case Threshing Machine Co. has declared the regular quarterly dividend of $1.75 a share on the preferred stock, payable Jan. 2 to stock of record Dec. 17.

United States Rubber Co. has declared the regular quarterly dividend of 2 per cent on the first preferred stock, payable Jan. 31 to holders of record Jan. 15.

Paige-Detroit Motor Car Co. has declared a 50 per cent dividend on capital stock, payable Dec. 22. This is half of the amount declared on Dec. 31 last.

Hupp Motor Car Co. has declared the regular quarterly dividend of 1¾ per cent on preferred stock, payable Jan. 1 to stock of record Dec. 20.

Gill Manufacturing Co. has declared the regular quarterly dividend of 50 cents a share, payable Jan. 2 to stock of record Dec. 20.

Kelsey Wheel Co. has declared the regular quarterly dividend of 1½ per cent on the common, payable Jan. 2 to holders of record Dec. 21.

Autocar Co. has declared the usual quarterly dividend of 2 per cent on the preferred, payable Dec. 15 to stock of record Dec. 5.

Borg & Beck Co. has declared a quarterly dividend of 75 cents, payable Jan. 2 to stock of record Dec. 20.

Reserve Board Reports on October Conditions

WASHINGTON, Dec. 12—Conditions in the automobile industry on Dec. 1 are described as "noteworthy" by the Federal Reserve Board in its monthly summary of business conditions.

Production and distribution of automobiles continues at a high rate, the board finds, "despite the approaching end of the usual automobile buying season." The October production increase over September is attributed by the board to the larger number of working days. "Yet," it adds, "the maintenance at previous high rates for so long a time is most noteworthy.

According to data collected by the Federal Reserve banks of Chicago and St. Louis, wholesale distribution of automobiles in October was less than in September, but greater than in October of this year. Retail sales showed increases as compared with the two previous months.

The used-car market also improved somewhat in October, as shown by increases in the number sold, the board reports. Salable used cars held by dealers, however, were considerably more numerous at the end of October than a month before.

Registrars See Tractors on Roads Causing Trouble

NEW YORK, Dec. 11—Motor vehicle registrars of the eastern States are disturbed over a new problem that is facing them. It seems that in some States applications have been made to register Ford tractors, with trailers, for general use on the highways carrying freight. As the tractors travel very slowly, it will mean that when hooked up to trailers and going over the main trunk routes traffic will be slowed up and congested very materially. There does not seem to be any law to prevent registering a tractor for highway travel.

The registrars are considering the advisability of appealing to the incoming Legislatures to take up the question on the ground that with tractors and trailers on the highways it will be a contributing factor toward accidents by forcing drivers to be cutting in to pass the slower moving vehicle.

A law providing that no vehicle shall use the roads whose maximum speed is under 20 m.p.h. is under consideration. Another one would call for prohibiting vehicles on the road which might contribute to accidents and, under the police power of the States, that could be held constitutional, it is claimed. Meanwhile how to keep the tractors off before any law is passed is a problem.

Firestone May Resume Dividends on Common

AKRON, OHIO, Dec. 10 — Reports which have been current during the month that Firestone Tire & Rubber Co. will resume dividend payments on common stock at the annual meeting scheduled for Dec. 20 cannot be verified at the company's offices, although it is said that the financial showing of the company will be satisfactory.

During 1922 earnings amounted to $7,348,000, or slightly in excess of $16.60 a share on the common stock, but the relation between current assets and liabilities was such that the dividends could not be resumed.

While no figures have been given out, it is reported that this relationship has been much improved and that earnings on the 1922 basis would justify dividend payments following the annual meeting.

During the first half of the year the company earned slightly in excess of $5,000,000, and while the second half was characterized by price cutting throughout the industry, it is not unlikely that some net earnings were shown. On this supposition the 1923 earnings will at least equal those of the previous year.

BANK CREDITS

Written exclusively for AUTOMOTIVE INDUSTRIES *by the Guaranty Trust Co., second largest bank in America.*

Although unseasonably warm weather still acts as a retarding influence, most branches of trade are active. The effects of holiday buying have become more pronounced.

Stock prices moved somewhat higher last week in moderately active trading. Both wheat and corn suffered slight declines, while cotton reacted sharply from the high figures of the previous week. Pig-iron quotations remain firm.

The production of pig-iron in November showed a further decline, the month's output amounting to 2,894,295 tons as against 3,149,158 in October and 3,086,898 in November, 1922. The average daily output of 96,476 tons compares with 101,586 in October and 94,990 a year ago.

The estimated production of steel ingots in November was 3,113,804 tons, comparing with 3,547,966 in October and 3,430,309 in November, 1922. The average daily output declined to 119,762 tons from 131,406 in October. Unfilled orders of the United States Steel Corp. on Nov. 30 totaled 4,141,069 tons, 304,241 less than on Oct. 31, and 2,471,658 less than on Nov. 30, 1922.

Car Loadings Declined

Car loadings for the week ended Nov. 24 numbered 990,217, as against 991,745 the preceding week and 946,642 a year ago. The complete returns of Class I railroads for October show net operating incomes amounting to $102,746,000, the largest monthly total in more than two years, representing an annual return of 4.72 per cent on the tentative valuation. The indicated return in September was 4.46 per cent and in October, 1922, was 4.05 per cent. The most favorable showing was made by the Western roads, with earnings of 5.36 per cent against 4.02 per cent in the Eastern district and 5.26 per cent in the Southern district.

Discounts by Federal Reserve banks declined $48,100,000 during the week ended Dec. 5, the decline being about equally divided between bills secured by Government obligations and "other bills discounted." Purchased bills increased $9,400,000; holdings of United States securities, $6,800,000, and circulation of Federal Reserve notes $6,300,000, while total deposits declined $3,100,000.

More Loans Reported

Loans of reporting member banks increased $6,000,000 during the week ended Nov. 28, while investments declined $13,000,000. Net demand deposits decreased $56,000,000 and time deposits rose $26,000,000. Reserve balances with Federal Reserve banks declined $5,000,000, while total accommodation at Reserve banks increased $41,000,000.

Call loan rates continued firm last week, ranging from 4½ to 5½ per cent. Time money was unchanged at 5 to 5¼ per cent.

Contest of Aviation Engines to Be Held

Competition Will Take Place in France Next Year Between Twelve Entrants

PARIS, Dec. 5 (*by mail*)—Twelve aviation engines, comprising two each from Renault, Breguet, Lorraine-Dietrich and Hispano-Suiza and one each from Peugeot, Panhard-Levassor, Fiat and Farman, will compete next year for the 2,000,000 francs cash prizes offered by the French government.

The object of the competition is to encourage the development of 350 to 400 hp. engines for commercial planes by submitting them to a 240-hour bench test, in which all involuntary stops or delays will be penalized.

A maximum weight limit of 7.2 lb. per horsepower is imposed, this weight comprising the engine and gasoline and oil for five hours' running, tanks excluded. The engines must be fitted with a device for starting up without swinging the propeller by hand.

The preliminary test in order to qualify for the 240-hour bench trials will comprise five hours on the bench to determine the number of revolutions corresponding to the power declared by the manufacturer; to prove that the engine can run at an inclination of 15 deg. in any direction; that it will throttle down to at least one-third the maximum number of revolutions and pick up readily; and that there is no misfiring or spitting back at any carbureter setting between maximum opening and one-third of this opening.

Two-Hour Flight

This will be followed by a flight of two hours, at an altitude of 6560 ft., on a single engine plane to be furnished by the competitors.

The final 240-hour bench test will take place in periods of eight hours in still air for water-cooled engines and in an artificial draft corresponding to 120 m.p.h. for air-cooled engines. After each test of eight hours the competitor will be allowed to work on his engine for a period of one hour.

Penalties will be imposed for delays in starting, for stops during a test, or for all parts changed or worked on. Gasoline and oil will be controlled during each eigh-hour test, and these results will serve to classify the competitors.

Of the 2,000,000 francs set aside for this competition, 1,000,000 will be used to purchase the winning engine, whether it be of French or foreign construction, and the second million will be distributed in cash prizes and in covering the expenses of French competitors.

CADILLAC SHIPMENTS GAIN

DETROIT, Dec. 10—Cadillac shipments for November are 87 per cent in excess of shipments in November, 1922, and 10 per cent higher than the best previous November. Deliveries at retail were 77 per cent higher, production 58 per cent higher and sales 131 per cent more than November last year. Compared with the corresponding period in the introduction of the type 61 in the fall of 1921, deliveries were 71 per cent higher and production increased 31 per cent. Sales of the V-63 over the type 61 in eleven weeks were 77 per cent higher.

INDUSTRIAL NOTES

Coulter Disc Co., Galesburg, Ill., which has been devoted to farm implement manufacture, is closing contracts for patent rights to automobile parts and will turn its plant into this field during the winter. Sufficient work is in view, it is said, to keep the normal crew at the plant steadily engaged in the winter and tide the industry through the dull period of the implement manufacturing season.

Ford Will Close 2 Days for Taking of Inventory

DETROIT, Dec. 12—The Ford Motor Co. will close down for only two days for the purpose of taking inventory. This annual check-up is scheduled to take place the latter part of the month, and the two-day shut-down will be the briefest period the big plants ever have been closed for this purpose.

This will reduce the company's working days this month to twenty-four, but it is expected December production will aggregate 150,000, possibly reaching 160,000.

Automobile Club Buys New Home in New York

NEW YORK, Dec. 13—The Automobile Club of America, whose big auditorium in the old club house on West Fifty-fourth Street has housed many meetings of the Metropolitan section of the Society of Automotive Engineers and other organizations, has bought a new home at 12 East Fifty-third Street.

PIERCE BANK LOANS REDUCED

BUFFALO, Dec. 13—Announcement is made by President Myron E. Forbes that the Pierce-Arrow Motor Car Co. has reduced its bank loans by $1,000,000, bringing its bank indebtedness from $3,500,000 to $2,500,000. A cash balance of more than $1,880,000 remained after this reduction in loans. Forbes declares 1923 business will run about 50 per cent ahead of last year.

CHAPIN RECOVERING RAPIDLY

DETROIT, Dec. 11—The operation for appendicitis on Roy D. Chapin, chairman of the board of directors of the Hudson Motor Car Co., was entirely successful. Chapin is reported to be making rapid strides toward complete recovery. He will remain in the hospital for several weeks.

METAL MARKETS

Daily newspaper reports emanating from Pittsburgh would convey the impression that a battle royal had been fought between producers and consumers of automotive sheets over the base price for that specialty, and that the consumers had gone down to defeat. "In the contest between mills and the automobile trade relative to a reduction the automobile trade has shown some signs of weakening," wires one of the Pittsburgh correspondents to a New York newspaper. "The latter claimed that automobile sheets should be reduced from 5.35 cents to 5.10 cents or $5 a ton. The probability is that the market will retain the 5.35 cents price. It is admitted that automobile sheets for early delivery have sold at less than 5.35 cents, but claimed that no deliveries over first quarter have gone at concessions. Some mills note an increase in the last few days in orders."

This "information" is based on statements by Pittsburgh steel mill sales managers who, in return for the favors extended by them to the newsgatherers, avail themselves not infrequently of the opportunity thus offered them to pay their compliments to the purchasing agents. It so happens that the propaganda in this instance is utterly innocuous. Checking off the ex-parte statements of the sales managers with the story which the automotive purchasing agents have to tell, we find that there has been no change, whatsoever, in the character of sheet buying by the automotive industries. Routine purchases for what nearby operating schedules call for, continue to be the order of the day. Some of the automotive sheet buyers, as admitted in the above statement, have been able to shade the 5.35 cents base price on tonnages that certainly could not have been very impressive but which may have pertained to rather attractive specifications.

Others appear to lose no sleep over the 5.35-cent base. But what they do resent, all and one, is the attitude disclosed by the following inspired statement quoted from a Pittsburgh dispatch to another daily newspaper: "These buyers want a 5.10-cent base Pittsburgh price, while producers have a minimum of 5.35 cents. For this difference of $5 a ton, or about $1.25 a car, since the average automobile does not contain more than 500 pounds of various metal sheets, many will postpone action." In a 4,000,000 motor unit year, such as the one now drawing to a close is anticipated to be, this difference of $1.25 per unit cost would aggregate $5,000,000 for the industry. Automotive purchasing agents would be emphatically derelict in their duty if they considered as a bagatelle such a saving if possible.

Pig Iron.—The foundry market has virtually gone to sleep.

Aluminum.—Impressive tonnages of aluminum are going into automotive castings being made in anticipation of spring requirements. Increased closed car production is accepted as an additional prop for the market, which is decidedly firm. New York brokers claim that they can find virgin ingots, 98 to 99 per cent pure, at around 26¼ cents, delivered, but considerably higher quotations are named in the Detroit market.

Copper.—As far as the copper market is concerned, the holiday period is already here. Producers' asking prices do not interest consumers, but the former prefer marking time to making concessions.

Calendar

SHOWS

Jan. 5-13 New York, Annual Automobile Show, under the auspices of the National Automobile Chamber of Commerce, Eighth Coast Artillery Armory.

Jan. 26-Feb. 2—Chicago, Annual Automobile Show, under the auspices of the National Automobile Chamber of Commerce, Coliseum and First Regiment Armory.

Jan. 26-Feb. 2—Chicago, Annual Automobile Salon, Hotel Drake.

Feb. 4-9—Chicago, Tenth Annual National Motorcycle, Bicycle and Accessory Show, Broadway Armory, under the auspices of the Motorcycle and Allied Trades Association, A. B. Coffman, secretary.

FOREIGN SHOWS

April 2-13—Barcelona, Automobile Exposition, under the auspices of the Confederacion de Camaras Sindicales Espanolas del Automovilismo y Ciellismo, Palacio de Arte Moderno.

Aug. 23-Sept. 6—Toronto, Ont., National Automobile Show in conjunction with the Canadian National Exhibition under the sanction of the Canadian Automotive Equipment Association and the Automotive Industries of Canada.

RACES

Aug. 3—Lyons, France, European Grand Prix.

April 27—Trapani, Italy, International Automobile Race.

CONVENTIONS

Jan. 5—New York City, Annual Meeting, Automotive Electric Association.

Jan. 14-18 — Chicago, Annual Convention and Show of the American Road Builders' Association, the former to be held in the Congress and the latter in the Coliseum.

Jan. 30-31—Chicago, Fourth Annual Meeting of the Automotive Electric Service Association, Congress Hotel.

Jan. 31-Feb. 1—Rochester, N.Y., Winter Sectional meeting of the American Society for Steel Treating, Hotel Seneca. W. H. Eisenman, secretary, 4600 Prospect Avenue, Cleveland.

May, 1924—Detroit, International Motor Transport Congress under the auspices of the National Automobile Chamber of Commerce.

June, 1924—Washington, Pan American Highway Congress, under the auspices of the Pan American Highway Mission.

S. A. E. MEETINGS

Dec. 20—Detroit Section, Enamelling of Steel Bodies with Duco, Round Table (Production), General Motors Building, Detroit, 8 p. m. Dinner, 6.30 p. m.

January—Metropolitan Section, No meeting in January.

January—Mid-West Section. No meeting in January. Mid-West Section will attend the annual meeting in Detroit in a body.

Jan. 17—Indiana Section, Motor Performance, H. D. Horning, Hotel Severin, Indianapolis. 8. p. m. Dinner, 6.30 p. m.

Jan. 22-25—Annual Meeting of the S. A. E.—Detroit.

Feb. 14 — Metropolitan Section, Vehicle Depreciation.

March 13—Metropolitan Section, Replacement Parts and Accessories.

April 17—Metropolitan Section, Fleet Maintenance, F. W. Winchester.

May 15 — Metropolitan Section, What Roads and Steels Do to Automobiles.

Lavaud Transmission Used on Voisin Cars

PARIS, Dec. 3 (*by mail*)—A first series of Voisin cars fitted with the Lavaud automatic transmission will be put on the market next March, and regular deliveries will be made to clients in the month of June, declares S. de Lavaud, the inventor of this device.

Voisin is building under a license granted by Lavaud and has secured the exclusive use of this transmission for races and competitions for a period of two years.

Comparative road tests of a car equipped with Lavaud transmission and a normal machine having a three-speed gear box showed that the automatic device had an advantage in acceleration from a standing start, and that it was considerably faster for all classes of hill work where gears had to be used. The more difficult the hill, the greater the advantage possessed by the Lavaud transmission.

On a very difficult winding hill, which called for second soon after the start, then for first and finally for second, the Lavaud transmission showed up to the best advantage, for it jumped away from the normal car after the first 50 yards had been covered and, going round a bend, was immediately lost to view. On a climb of nearly three-quarters of a mile it won by probably 300 yards.

Normal Car Leads at Start

From standing starts on the level, the normal car showed a slight advantage for the first two or three yards, but after this the Lavaud shot in front and was always leading by a substantial margin when the normal car had got into top. This was confirmed by repeated tests, during which every advantage was taken of the engine and the gears on the normal car. On a dead level road, the two cars were very evenly matched, the trials showing that the normal car could always hang on to the Lavaud.

Under traffic conditions the Lavaud car could be controlled almost entirely by the accelerator pedal, the clutch being used only on the rare occasions when it was necessary to come to a complete stop. The car under test, with four connecting rods from the swash plate to the free wheel device in the rear axle, was satisfactorily silent.

Another car, a heavy Delahaye, with six connecting rods, was dead silent.

3136 Cars Delivered in Detroit Last Month

DETROIT, Dec. 10—Cars delivered at retail in Detroit during November totaled 3136, an increase of 1037 over November totals of last year. Closed cars delivered were 2119 as against 1254 and open cars were 1017 as against 845.

Truck deliveries in November exceeded the same month last year by totals of 425 to 278. October car deliveries this year were 4692 and truck deliveries 581.

Comparison of the month for the two years shows practically every company sharing in the increase over last year. Ford, with 1679, compares with 920 last year. Buick compares 190 to 137; Dodge Brothers, 113 to seventy-seven; Studebaker, eighty-four to sixty; Hudson, sixty-seven to thirty-four; Willys-Knight, forty-three to seventeen; Maxwell, ninety-one to thirty-seven; Oakland, fifty-one to twenty-one; Olds, forty to ten; Overland, eighty to thirteen: Cadillac, sixty-five to twenty-seven, and Lincoln, twenty to four.

Ford's truck total is 252 as against 193 a year ago. Reo delivered twenty-six as against eighteen. Federal, the leader in the heavy duty field for the month, had eighteen compared with seven, and Dodge Brothers, twenty-five to nine. Chevrolet delivered twenty-six. Other leaders in the heavy duty field were Mack, with nine; Gotfredson, six; G. M. C., ten; Ruggles, four, and Standard, five. Five Walker trucks were delivered.

Commission Control Opposed in Indiana

INDIANAPOLIS, Dec. 7—Allied Motor Commerce of Indiana held its second annual convention today with many Indiana motor vehicle operators and bus owners and men of the highway industry present.

One-half the program was devoted to papers on streets, highways, their finance and care, including lighting, while the commission control of commercial motor transport came in for heavy gunning by H. E. Negley, counsel, and S. H. Hadden, secretary of the organization.

Hadden confined his case against the commission idea to citing cases of old, well organized and established motor express routes in Illinois and other States being ruled off the highway because they competed with rail lines. That similar results would happen in this State, if the commission control idea were imported, was certain, as it is criss-crossed with traction lines that parallel every highway and in many cases actually are constructed on the highway right of way.

John L. Elliott, city engineer of Indianapolis, pleaded for a progressive view on financing street maintenance. He wants State aid if that is possible from motor vehicle fees or gasoline tax money.

Truck Owners Opposing Tax on License Plates

CLEVELAND, Dec. 12—Owners of motor trucks here organized today to attack the license plate tax on motor trucks which was levied in a bill enacted by the Ohio General Assembly.

The truck men will base their attack on the ground that the new license fee is unfair in that it is graded on the horsepower of the engine instead of on the size of the truck. Five-ton truck operators under this law must pay $130 for a license plate for each truck as compared with $60 last year.